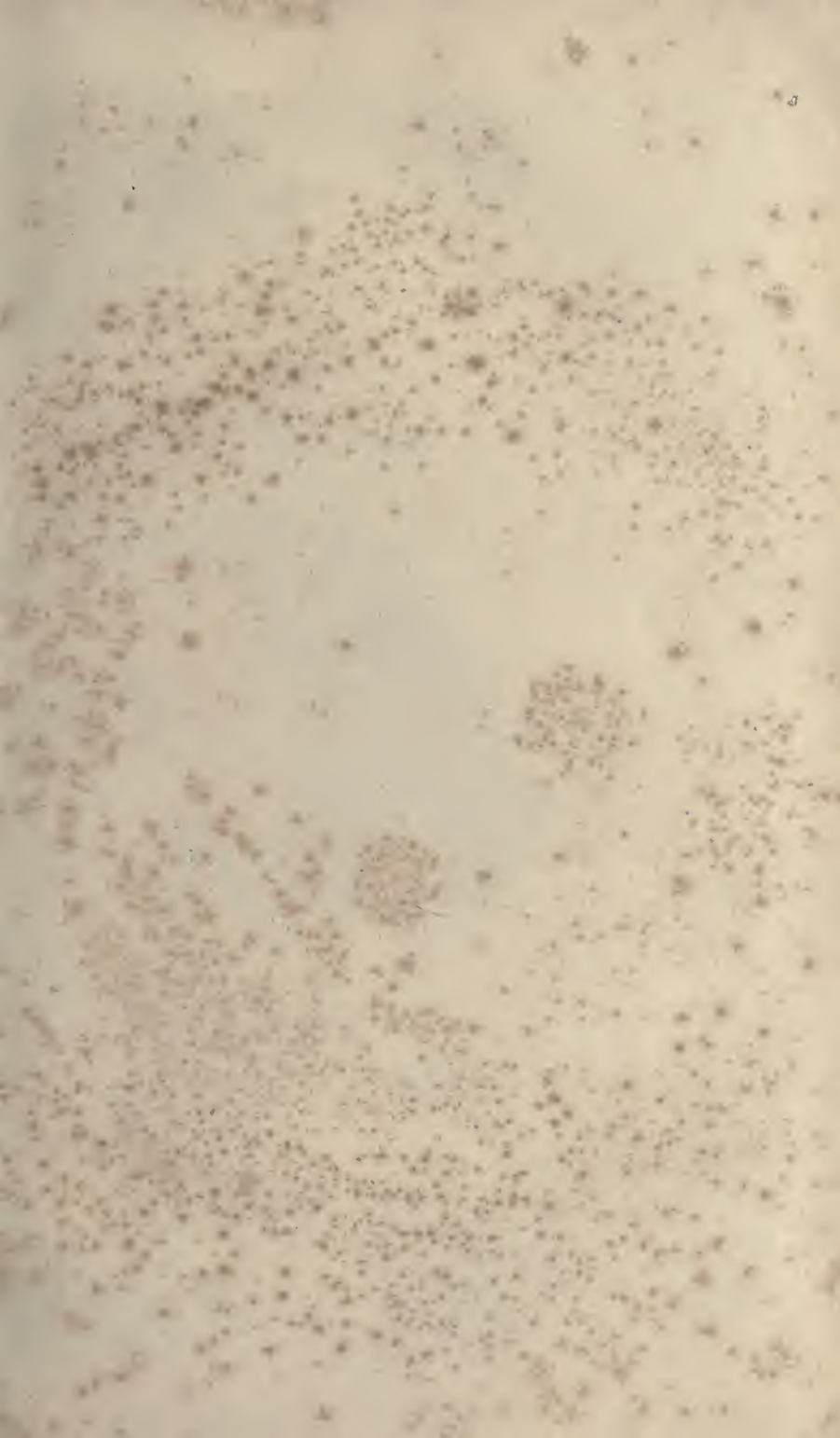


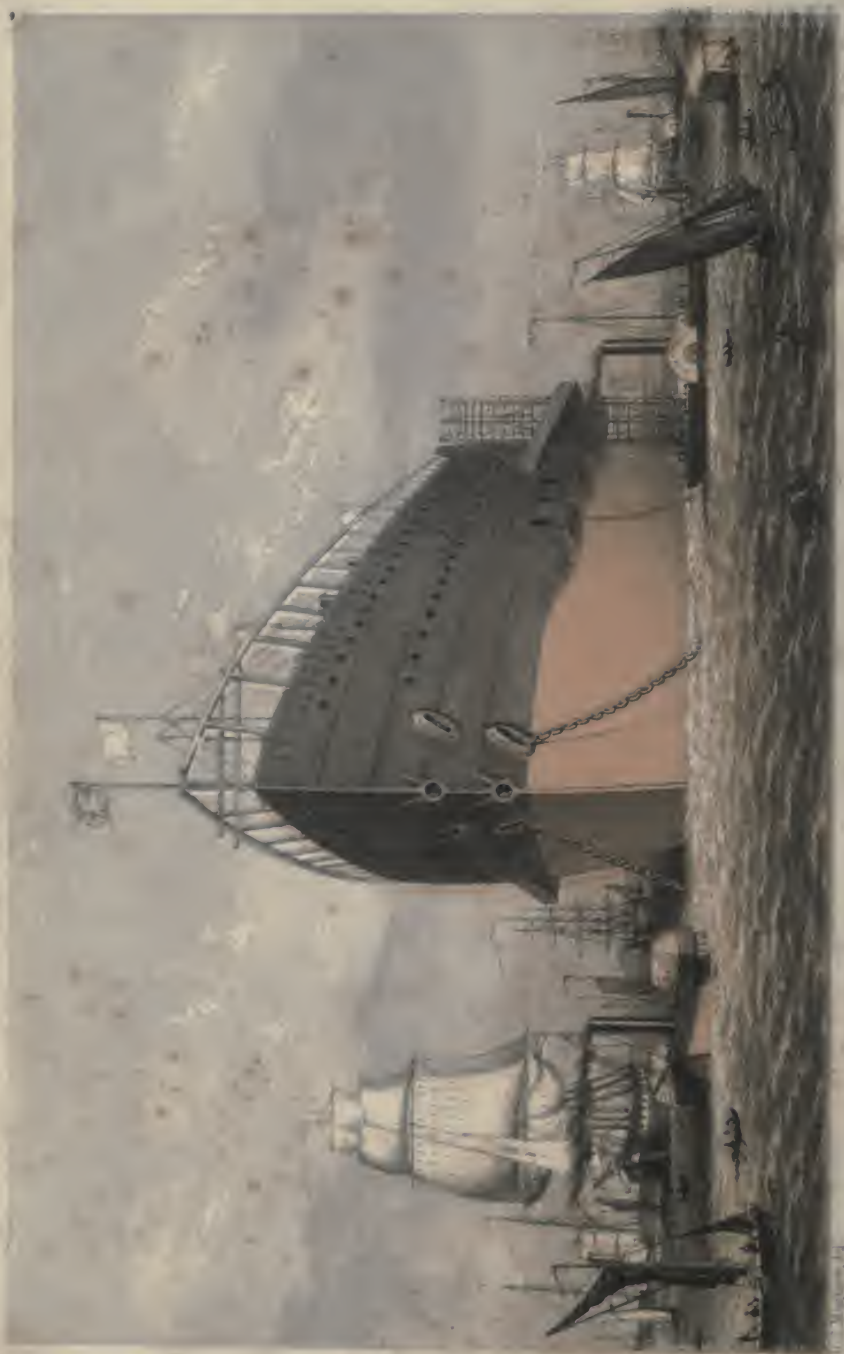
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THE

# HISTORY OF PROGRESS

IN

## GREAT BRITAIN.

BY

ROBERT KEMP PHILP.

WITH NUMEROUS ILLUSTRATIONS,

BY

W. NEWMAN, C. MELVILLE, J. GILBERT, H. C. MAGUIRE, &c.

AGRICULTURE.  
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CARRIAGES.  
WATER CONVEYANCES.

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## P R E F A C E.

I SUBMIT this volume of the "History of Progress" to the Reader's attention, believing that it contains some interesting facts and records not hitherto known, or, at least, not heretofore applied to demonstrate the growth of the British mind, and the development of our nation's material resources. Having preferred to divide the progress of the several branches of national industry and skill into distinct Sections, and to trace the growth of each separately, I must solicit the Reader and the Critic not to set down as omissions the absence of some matters which are not included in the present volume, solely on account of the classification I have adopted. For instance: the Section upon Horticulture, which remains to be written, will impart completeness to the Progress of Agriculture, herein contained; and in like manner, the Section upon Commerce will be found an essential addition to the Progress of Shipping, Navigation, and Geographical Discovery.

The Reader should remember two things. First, that the history is necessarily rapid, concise. In this volume there are contained four distinct Progresses, either of which might easily have been elaborated to the dimensions of the whole volume. Second, the Sectional Histories are brought down to the period which *meets the introduction of steam power and machinery*. The age of steam forms a strongly marked epoch, and will be fully considered in the Progress of Steam Navigation, Locomotion, etc.

I trust that, though concise, the History is not superficial. I have endeavoured to throw myself as far as possible into the moral and mental atmosphere which surrounded our fathers; I have striven to realize their life, thoughts, fears, and difficulties. And

the Reader will find that, having done this, I frequently quote their words, in preference to using my own; feeling convinced that no language of mine could so aptly explain the old notions of vegetation (for instance) as those which have been given from Goodge, Platt, Gabriel Plattes, Markham, and other "ingenious husbandmen," who undertook to enlighten mankind upon their favourite theme; and that the notes by Pigafetta upon Magalhaen's voyage most significantly show the scantiness of knowledge of natural phenomena and history in the sixteenth century.

I have chosen to let the "god-like heroes which Queen Elizabeth drew around her in her ever-glorious reign" explain their own deeds of honour and valour. Had space permitted, the enumeration of such deeds might have been largely extended. Those who relish this kind of glory, and thirst for a longer narration of its achievements, may be amply gratified by reference to the original authorities, whose testimony I have adduced.

I must further say that this was designed to be essentially a British History, and to be confined, as far as possible, to the advancement made within our own islands. But as Britain is connected, by the sea and her shipping, with every part of the world, I have found it necessary, in the chapter upon Navigation and Geographical Discovery, to wander beyond the prescribed limits, and to include the Portuguese and Spanish discoveries which opened to British enterprise a highway East, West, and South. The history of Geographical Discovery, so far as relates to the exploration of the countries discovered, will occupy a separate Section.

Hoping that some of those who have faith in human progress, and believe in the dignity of labour, and the ultimate practicability of "peace and good will among mankind," will find in this work grounds to strengthen their conviction and brighten their hope, I shall continue my labours, trusting that in recording the History of Progress, I am contributing to its advancement.

R. KEMP PHILP.

LONDON, 1859.



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
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# HISTORY OF PROGRESS IN GREAT BRITAIN.

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## Book I.

### GENERAL VIEW OF THE STATE OF BRITAIN AT THE PERIOD OF THE ROMAN INVASION.

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#### CHAPTER I.

##### INTRODUCTION.

AMONG our Celtic ancestors some were worshippers of the Sun, others of the Moon ; some paid their adorations to Fire, others deified Mountains, Rivers, Lakes, and Trees. We thus learn, even from those barbaric times, as well as from the experience of to-day, that where and whenever objects present themselves to the minds of men, there will arise differences of opinion respecting them. Whether this deduction from the experience of ages tends to depreciate or to exalt the dignity of the human mind—whether it suggests that to pursue the Truth is to seek the Impossible—will be earnestly considered in those Chapters in which the History of Opinion will be recorded, and various mental phases and speculations examined.

There is reason to believe that between the worshippers of the Sun and Moon, Fire and Water, and the Polytheistic deities, there raged an infatuated warfare on behalf of their respective gods. The terrible sacrifices ascribed to the Druids, in which they are said to have immolated thousands of human beings, could scarcely have been attributed to simple warfare. Those sacrifices, always directed by the Druidical priesthood, were conducted with all the imposing solemnity of the



religious rites of the period, and were doubtless, in some instances, designed to exterminate heresies which were imagined to vex the gods of the dominant faith.

It has been found that neither the cross, the sword, nor the stake, nor these combined, can perpetuate error or extinguish truth. Those bearded men in their sacerdotal robes, who were once believed to be the appointed priesthood of the gods they revealed, have passed away—themselves, their deities, their rites, are now known only upon the page of history; while a few rude stones remain to show the wreck of their temples, and the fate of the workers of sacrifices.

When, however, we turn back to the Past, and form our judgment of its history, we should exercise the like charity which we would apply to the Future. The “learned” men of whom we write—before whom the poor, the captive, and the ignorant bowed and trembled—were not beings of their own creation, nor was their religion an enigma of their own invention. When they gathered in dark recesses of sacred groves to communicate their unwritten mysteries to the younger priesthood; when they bowed to worship the serpent, or performed their incantations with the aid of the serpent’s egg; when they disembowelled their victims, and foretold events by the writhings and contortions of the dying, and the direction of streams of blood,—they were guided by “the wisdom of their ancestors,” and pronounced divinations by rules that had traditionally descended to them from remoter times.

Even amid the clouds of Druidical ignorance, there appears to have shone a star of truth. It was a part of their belief that the world was to undergo an endless succession of great revolutions, some of which were to be effected by the power of Fire, others by that of Water. What fire and water have done, under the direction of the human mind, for the civilization of the world, it will be one of the purposes of this History to show. There is this difference, however, that may be at once pointed out, between the Britons of old and Englishmen of to-day: they were superstitious enough to worship that which we are bold enough to command. In looking back to the opinions of the past, we shall find that there has scarcely ever been received a form of error in which there did not lie some ingredient of truth. But the mass could not be refined, and truth separated from the dross of error, because there has always been some dominant power to patent the dogma of the age, and to forbid the free working of the human mind. But for this conservative policy—a policy which preserves the withered trunk, and

forbids the young branches to grow—the last of the Druids might have witnessed the first fulfilment of the truth they taught, by an allegory they could not comprehend.

The Author has decided to commence this History of Progress from the remotest times, for the purpose of showing how tardy is the growth of good when the nation's mind is under the stern control of autocratic authority—how rapid its development when the blighting grasp of inquisitorial tribunals is relaxed, and currents of thought are permitted to flow and mingle as freely as the winds of heaven.

Nor will this History be confined to the recording of the growth of abstract principles and rights. It will treat of the growth of our daily comforts—those small blessings which have surrounded us imperceptibly and swollen the tide of our happiness to a degree which can scarcely be appreciated without a knowledge of the troubles and privations of past ages. It will treat fully of these, as well as of those larger strides of Progress which have achieved wonders greater than those the ancients ever ventured to invoke from their gods.

A history of the People, their struggles, their industrial and mental improvement in all ages, whether rapid or slow, remains to be written. A history which shall not seek to dazzle the public mind by pointing to the achievements of war as the best monuments of our national greatness; which shall not call the demolition of cities a "victory," nor shedding the blood of innocents, "glory;" which shall not designate oligarchal selfishness "loyalty," nor wild outbursts of popular wrath "patriotism;" but shall faithfully depict, according to the best evidences that remain, the grand battle which had been raging from the earliest ages between Right and Wrong, Knowledge and Ignorance, Motion and Inertia—now advancing, now rolling back—now lulling into silence, like the stillness of a sullen evening—now breaking out into instant tumult, like the thunder of a stifled night, until, among the mighty elements of social warfare, there arose a great ally of Truth and Freedom—the Press—which at once proclaimed that God, who gave to man the garden of the earth to subdue and cultivate, had given to him the garden of the mind, with its rarer atmosphere of thought, and its richer flowers of imagination, not to remain a desert waste, a dark chaos, over which no voice should pronounce the benediction, "Let there be light!"—the Press, which abolished the serfdom of mind, as slower agencies had previously abolished the serfdom of those bodily machines that are the instruments



of mind—the Press, which rapidly created a power that no sword's edge is keen enough to wound, no fires of persecution fierce enough to extinguish.

A History so written, while it will teach to the Few liberality, and confidence in popular rectitude, will also teach to the Many moderation, and a due knowledge of the stages of growth through which every plant of Progress must pass before it can bear fruit. If these lessons shall be faithfully given and received, there will be no lack of labourers for the harvest of the Future, and those who have hands to work will readily obey those who have minds to direct.

In undertaking to write a History of these pretensions, the Author has resolved to add to the interest of the subject by frequent pictorial illustrations. Scattered in old manuscripts, tapestries, and illuminated and printed volumes, there are many curious illustrations of the manners and customs of by-gone ages; but the Author will prefer to render them in the style of modern art, and to interpret them by

the text of history, rather than to perpetuate the absurdities and incongruities which were attendant upon the productions of times when the arts were little understood. In justification of such a course, it may be explained that in no age could a warrior have continued to fight after being transfixed with an arrow; nor would a knight have appeared on the battle-field with his helmet over his eyes and a sword in each hand, as in the accompanying fac-



similes from Strutt's *Chronicles*.

The Author ventures to believe that even to men of unreflective minds, such a history may present attractive features. Gentlemen who study the etiquette of morning and evening costume, will surely be interested to know that only a few centuries ago their forefathers interposed no garments between their woad-stained bodies and the moving winds, or merely hung loosely about them the skins of beasts.

Those who feel pride in a long ancestral line will scarcely object to trace their genealogy back to the remotest period. It matters not whether we claim descent from the Celts, the Romans, the Saxons, the Danes, or the Normans, the same rude story supplies the foundation of the history of all mankind. In the times of which we write, the only polka that had been heard was the whistling of the winds among the trees, and the only national anthem was the song of the waves upon our sea-girt shores. To those who now surround the family fireside, when the curtains are snugly drawn, and cold winds whistle along the impervious walls and windows, it must be interesting to know that at one time own ancestors lived in houses formed only of one room, having a fire in the centre of the floor, around which they used to lounge or sit, and spread for bedding at night the skins they wore for garments by day. The roof formed a cone which answered the double purpose of a chimney and a window; through its large orifice the rain and hail fell, driving down large flakes of soot, and the wind moaned like the solemn voice of a troubled spirit lamenting the ignorance of mankind. At a much later period, and long after the invention of glass, that article was deemed such a luxury that noble families when leaving their town residences for the country season, had the window-panes removed and carefully packed in straw for security. Glass was not then such as we now have; it was tinged with a sickly colour, was uneven in surface, and full of specks and imperfections. Pewter, from which working men now quaff their pints of porter, was such a luxury that noblemen used to hire it for banquets from brokers, as they now sometimes hire silver and gold. But we anticipate our History.

A recent historian,\* in the introduction to his "History of England," says—"Unless I greatly deceive myself, the general effect of this chequered narrative will be to excite thankfulness in all religious minds, and hope in the hearts of all patriots. For the history of our country during the last hundred and sixty years is eminently the history of physical, of moral, and of intellectual improvement. Those who compare the age in which their lot has fallen with a golden age, which exists only in their imagination, may talk of degeneracy and decay; but no man who is correctly informed as to the past will be disposed to take a morose or desponding view of the present."

The Author of the "History of Progress," so far from taking a morose and desponding view of the present, will probably be found in

\* Lord Macaulay.

advance of public opinion in his estimate of the importance of the Progress that has been made, and the benefits that result therefrom. He believes that the great charters of modern freedom and improvement are not inscribed alone upon marble, or written upon parchment, to be revoked or neutralized at the caprice of a government or the will of a tyrant. They are engraved in lines of iron over the whole face of our land; they are traced in a million track-ways upon the seas, even in defiance of tide and wind; the very earth has found, in electric wires, nerves that are everywhere ready to stir the nation's heart. No "Doomsday Book" will ever again be written; for there is now a book in every hand, kindling into activity the intelligence which God has allotted to each of his creatures.

With such foundations for their greatness as we now enjoy, the splendid states of Greece and Rome would have been eternal. The Progress of a few centuries has made a mere colony of Rome, the first kingdom of the world; the absence of Progress has sunk the once mighty empires of Southern Europe to the rank of petty states, adding nothing to the improvement of mankind, but frequently disturbing the peace of the world by affording a corrupt arena in which diplomatic intrigues are fostered.

There will be no disposition displayed in this History to attack particular parties, or individual men, for the errors and oppressions of the past. Its aim will be to fearlessly and honestly expose error and oppression, regarding them as in some degree the necessary evils of unenlightened ages: no less repugnant, however, on that account. It will seek to impose upon the Men of the Future the great responsibility of avoiding a repetition of those errors; and will endeavour to inspire the hearts of all men with a deeper faith in the progressive virtues of the human race, and to obtain from every individual a warmer co-operation for the general good. The work of the future is to perfect Progress, and to diffuse its benefits, since no power can resist its onward course, and its blessings are too many to be held in the grasp of monopoly.



## CHAPTER II.

A FABULOUS HISTORY, RECEIVED FOR CENTURIES—STATE IN WHICH THE ROMANS FOUND THE ISLAND—WHAT EFFECTED THE CONQUEST?—THE ROMAN FLEET: A CONTRAST.

A DEEP obscurity surrounds the history of Britain prior to its invasion by the Romans under Julius Cæsar. The fabulous account of the first inhabitants of Albion, derived from the *Chronicles of Geoffrey of Monmouth*, a Benedictine monk, written in the twelfth century, is chiefly interesting as an evidence of the extent to which stories of the improbable and the marvellous were received through several ages, coming down to a comparatively recent date.



According to Geoffrey, Brutus, a Roman, killing his father by accident, was overwhelmed with remorse, and fled his native country. He retired into Greece, and mingling with a number of the descendants of the Trojans, who had been scattered by the siege of Troy, he organized with some of those people a predatory excursion, and put to sea. After exploring the shores of the Mediterranean, he entered the Atlantic Ocean, and achieved various successes against the kings of Gaul.

After wandering in every known direction, and plundering every people whom his party conquered, he was directed hither by the goddess Diana, whose statue he found in a ruined temple upon a deserted island. The story is thus gravely told and minutely particularized by the old chronicler:—

Brutus, advised by his company, resolved to visit the temple to do homage to the goddess, and to inquire of her the country allotted



to them for a place of settlement. He therefore set out, attended by Gerion, a prophet, and twelve old men. Arrived at the Temple, they presented themselves before the shrine, where stood a statue of the goddess, who gave answers to those that paid her homage and solicited her aid. They placed wreaths round their brows, and then kindled three fires to the three deities, Jupiter, Mercury, and Diana, and offered sacrifices to each. Brutus stood before the altar holding a consecrated vessel filled with wine and the blood of a white hart, and addressed the goddess thus:—

“Goddess of woods, tremendous in the chase  
To mountain boars, and all the savage race!  
Wide o’er the ethereal walks extend thy sway,  
And o’er the infernal mansions void of day!  
Look upon us on earth! unfold our fate,  
And say what region is our destined seat?  
Where shall we next thy lasting temples raise?  
And choice of virgins celebrate thy praise.”

He repeated these words nine times, after which he took four turns round the altar, poured the wine into the fire, and then laid himself down on the hart’s skin before the altar, and fell asleep. At the third hour of night the goddess presented herself to him, and foretold his future success as follows:—

“Brutus! there lies beyond the Gallic bounds  
An island which the western sea surrounds,  
By giants once possessed; now few remain  
To bar thy entrance or obstruct thy reign.  
To reach that happy shore thy sails employ;  
There Fate decrees to raise a second Troy,  
And found an empire in thy royal line,  
Which time shall ne’er destroy nor bounds confine.”

They accordingly set sail, and after dangerous voyages and fights with pirates, whom they defeated and deprived of their spoil, they reached the shores of Albion, where they landed at a place where Totness now stands, in the county of Devon.

Brutus divided the island between himself and Corineus. It was a favourite diversion of the latter to encounter the giants, of which there was a greater number in Cornubia than elsewhere. Among them was a rare monster, Gog-Magog, in stature twelve cubits, and so enormously strong that he could pull up an oak as if it had been a hazel wand. On

a day when Brutus was holding a solemn festival to the gods, this giant, with twenty more of his companions, came in upon the Trojans, and made dreadful slaughter; but the latter at last assembled in a body, and killed all the giants save Gog-Magog. Brutus gave orders to have him preserved alive, wishing to see a combat between him and Corineus, who took great delight in such encounters. Corineus threw aside his weapons, and challenged the giant to wrestle with him. At the beginning of the encounter, Corineus and the giant, standing front to front, held each other strongly in their arms, and panted aloud for breath; but Gog-Magog presently grasping Corineus with all his might, broke three of his ribs. At which Corineus, highly enraged, roused up his whole strength, and snatching him upon his shoulders, ran with him, as fast as the weight would allow, to the next shore, and there getting upon the top of a high cliff, hurled down the savage monster into the sea, where, falling on the sides of craggy rocks, he was torn to pieces, and coloured the waves with his blood. The place where he fell is called Gog-Magog's leap to this day!\*

This romantic and highly improbable story of Brutus, the Trojans, and the giants, appears to have been accepted with considerable favour, and to have formed the popular history of our nation for a period of four hundred years. Speed, the historian, makes this mention of it:—"The last, but *much applauded opinion*, for the possessing and peopling of this island, is that of Brute, generally held for the space of these last four hundred years (*some few men's exceptions reserved*), who with his dispersed Trojans came into and made conquest of this island, the year of the world's creation 2887, and after the universal flood 1231, in the eighteenth yeare of Heli his priesthood in the land of Israel, and

\* The huge effigies of two giants, now in Guildhall, London, had their origin probably in the desire of the corporation to perpetuate the memory either of the story of the giants of Albion generally, or of the conflict between Corineus and Gog-Magog, in which the last of the giant race was overthrown. By some persons the opinion is entertained that the present figures represent Gog-Magog and Corineus, the younger looking figure being intended for the Trojan. During Elizabeth's progress to her coronation, Gog-Magog and Corineus, two gigantic figures, were stationed at Temple Bar; and it seems highly probable that these effigies were brought from Guildhall for the occasion. The history of these figures, which were first made of wicker-work covered with paper, can be traced to a period prior to the great fire in 1666, when the hall being much damaged, two *new figures* of gigantic magnitude were ordered to be made. These effigies were sometimes conveyed through the City as a part of the pageantry of the Lord Mayor's show. It is not improbable that they originated in the twelfth or thirteenth century, a period when the history contained in the *Chronicles* of Geoffrey of Monmouth was believed even by learned people.

before the incarnation of Christ our Saviour, one thousand fifty-nine." This historian, writing in the commencement of the seventeenth century, finds it necessary to quote the opinions of numerous authorities, and to estimate various discrepancies of dates and facts, with the view of disproving the foregoing account of the descent of the Trojans upon our island, and the gigantic stature and ferocious nature of its primitive inhabitants!\*

At the time of the invasion of this island by Julius Cæsar, the country was divided into settlements occupied by different tribes, of which those on the southern coast, opposite to Gaul, were the most advanced towards civilization, on account of their intercourse with the people of Gaul, and probably of other nations. But those southern tribes, of whom it may be said that they were only slightly removed from absolute barbarism, constituted a small number in comparison to the inhabitants of the island, upon whom no ray of civilization had dawned. The conquests of Julius Cæsar penetrated the interior of the country to a very limited extent.† It was not until the governorship of Agricola, some hundred and forty years after the invasion by Cæsar, that the whole of the tribes occupying the interior, and a portion of the north of the island, were subdued. Even then the Caledonians, and the Picts and Scots, continued their hostility not only to the Roman authority, but to the British people on their borders. In the interval between the invasion by Cæsar and the further conquest of Britain by Agricola, new tribes were frequently discovered which were before unknown, and battles were constantly waged by the various Roman generals to bring the newly-discovered people into subjection.

A very great portion of the island was then covered with woods, fens, and marshes; the assemblages of rude houses which constituted the towns were invariably centered in forests, some of the trees being felled to clear the ground for a settlement, the trunks thereof being used as barriers against the incursions of enemies, and further strengthened by ditches dug around them. The approaches to those

\* The acute and judicious Camden, at the end of the sixteenth century, was almost the first inquirer into our national antiquities who ventured to question the long-credited tale; yet nearly a hundred years afterwards we find a belief in its truth still lingering in the poetic imagination of Milton.—*Knight's Pictorial England*.

† Tacitus, writing one hundred and fifty years after Cæsar, says distinctly that, although Cæsar struck terror into the islanders by successful battles, he could only maintain his authority on the sea coast. He saw only a small portion of the island; and the further he receded from the sea, the more barbarous he found the inhabitants.



towns were little more than track-ways through the forests. Julius Cæsar said, they give the names of towns to certain cumbersome woods, which they fortify with rampires and ditches, whither they retire to eschew the invasions of their enemies. And Strabo describes a British town as a spacious round plot of ground, where they build for themselves houses and cottages, and for their cattle set up stalls and folds, but those for present use only, and not for long. This testimony suggests that even their towns were only temporary settlements, that they were liable to be driven away by the attacks of their enemies, or compelled periodically to migrate to find pasturage for their cattle. Cæsar speaks repeatedly of his army driving the Britons into the woods, and of their frequently surprising his legions by suddenly emerging from the fastnesses to which they had fled. Some of those woods were of immense extent, and covered whole counties, except in the parts which had been cut away to form settlements; and so great were the obstacles presented by those vast forests to the progress of the Roman armies, that the first work of the invaders was to cut wide ways through the woods, that they might the more effectually pursue the Britons, and also defend themselves from the frequent attacks of large numbers of their enemies collecting in ambuscade.

Bogs and marshes, too, presented great obstacles to the progress of the Romans into the interior. The Britons, knowing the situations of those marshes, were able to avoid them; and one of their stratagems of war was to make their flight in such a direction, that their pursuers might become involved in the marshes and destroyed. An engagement is mentioned in the reign of Claudius wherein the Britons, knowing the fordable passages of a boggy country lying near the mouth of the Thames, made a retreat, and a large number of the Romans, pursuing them too rashly, fell into impassable bogs, and were destroyed. The Romans, therefore, found that until they cut through the woods, constructed roads, and drained the marshes, they had little chance of effecting a complete conquest of the people. In the expedition of the Emperor Severus to Caledonia, as long as two hundred and sixty years after the invasion, the Romans met with little opposition from the British tribes; but the obstacles presented by woods and fens were almost insurmountable. Severus, who held his court at York, resolved to enter Caledonia and subdue the northern barbarians. The county of Durham, and the country lying to the north, was still an impassable wilderness; every league that the Roman army advanced gave them an



incalculable amount of labour in cutting down forests, draining morasses, constructing roads, and bridging rivers. Stagnant and marshy waters created pestilence among his troops, and so great was their sufferings that some of the soldiers are said to have implored their companions to kill them, that they might not, while plague stricken, fall into the hands of their enemies. It is stated that in this expedition Severus lost no fewer than fifty thousand men, though he fought no battle nor saw any large body of enemies.

From these facts we may gather some idea of the primitive wildness of our island prior to the Roman invasion, and for nearly three centuries



BRITONS OF THE TRINOBANTES, CANTII, AND SOUTHERN SETTLEMENTS.

subsequently. But we do more than this: we learn that it was to the pick and spade, rather than to the sword; that it was to the levelling of forests, rather than to the slaughtering of armies of men; to the draining of marshes, and not to the draining of human veins; to the opening of ways, and not to the construction of walls and fortresses, that the Romans, after a struggle of two hundred and sixty years, chiefly owed the ultimate subversion of a barbarian people. True, great sacrifices of life were made in those early works of Progress; but the sacrifices were due to the war element which still lurked in those designs, causing them to be pursued with an unnecessary impatience

destructive of human strength. By those improvements the Roman rule gradually assumed such a hold upon the British heart, that when at a later period the Romans withdrew from Britain, and released the people from allegiance to their power, the emancipated Britons, dreading again the disturbance of their kingdoms and the spoil of their settlements, which had assumed a happier aspect under the Roman dominion, implored their conquerors to remain, and tendered their warmest adhesion to Latin authority. Thus, in that dark age, a barbarous people was taught so to appreciate the benefits of advanced government, that



BRITISH TOWN.

they readily submitted to be governed, and parted with their first conquerors with regret.

While the impassibility of the land for a long period gave great advantages to the Britons in warfare against their invaders, the sea afforded vast facilities to the Romans, since the Britons had not yet learned the art of ship-building. Their boats, or coracles, as described by Cæsar, were built of light wood covered over with leather. In those frail vessels they floated about upon the rivers, made excursions along the coast, and sometimes voyaged to Gaul, to Hibernia, and to the islands of Mona, Monoeda, and Vecta. But so little did the Britons



know of ships of any considerable dimensions, that Cæsar says they were awed at the first invasion by the shape and appearance of his galleys, and that they halted, and began to fall back. It is probable that some of them, who had been trading with the Phœnicians and the Gauls, might have seen large vessels; but to the hosts who had gathered on the shore to resist the landing of the Roman legions, the appearance of formidable galleys, propelled rapidly by a number of rowers, inspired terror. And still later (A.D. 84), when Agricola took his fleet to explore the coasts of the powerful nations that dwelt beyond the Forth, the Britons of those parts were struck with consternation.

When we consider the great maritime supremacy of the British people in the present day, it becomes interesting to ponder upon these evidences of the simplicity of our ancestors.

Such has been our mighty advance in maritime progress, that not only do the coracles of the primitive Britons appear insignificant, but even the fleets of imperial Rome will scarcely bear comparison with the squadrons of fishing craft that now daily expand their white sails upon the bosom of our blue waters. When we consider the safety and power with which our ships majestically plough the briny deep, the exploits and disasters of the Roman fleet possess a complexion of Quixotic colouring.

In his first invasion (B.C. 54), Cæsar left the Gallic shore with two legions of infantry, on board eighty transports. His cavalry also embarked in eighteen other transports, and were ordered to follow Cæsar, "as soon as weather permitted." But the weather did not permit, and the Roman horse were detained some four days, until their services were "no longer required," at least for the actual purposes of the invasion. Arrived on the British coast, at ten o'clock on the morning of the 25th of August, Cæsar found that he had selected the wrong spot to effect a landing, so he bore along the coast, from a point near Dover, until he reached an open and flat shore, supposed to lie between Walmer Castle and Sandwich. Here some laggard vessels, which in so short a voyage had dropped away from the fleet, hove in sight, and at three o'clock in the day, the Roman legions effected a landing, in spite of a stubborn resistance from the Britons, who had journeyed along the coast for the purpose of opposing them. Some days after, when a peace had been concluded between Cæsar and the southern Britons, the transports having the cavalry on board hove in



sight; but before they could reach the shore, and while they were in view of Cæsar's camp, a tempest—such a one as our fishing craft would now probably defy—drove them all back to the port whence they had sailed. And, to make Cæsar's disaster all the worse, it happened that same night to be full moon, the occasion of spring-tides—a fact unknown to the Roman navigators. The galleys which had landed the troops, and which had been drawn upon the shore for greater security, were seized by the swelling tide, and washed away, and the transports, which lay at anchor in the roadstead, were either dashed to pieces or rendered unfit for sailing. As soon as the Britons discovered the disasters to Cæsar's fleet, they revoked the terms of the peace they had concluded, and again put themselves in open hostility to his authority. Cæsar did the best he could to collect his scattered fleet, and repair those vessels that were not fatally injured. After a few skirmishes with the enemy, in which he again established the supremacy of the Roman arms, he concluded fresh conditions of peace with the Britons, upon easy terms, and determined to return to Gaul, "because the equinox was approaching, and his ships were leaky."

In the spring of the following year he once more embarked from the same point, with a fleet of 800 vessels of all classes, carrying 30,000 men, and 2000 cavalry. He effected an unopposed landing near the same point as before; and having moved a large proportion of his force inland, in pursuit of the islanders, who had broken the terms of the peace previously concluded, he fought a battle with them near the spot where the city of Canterbury now stands. The Romans drove the Britons into a dense wood. The following morning they were about to follow up the advantage they had gained; the trumpets had sounded for the advance, when a party of horsemen arrived to inform Cæsar that his fleet had again been completely wrecked during the night. He immediately ordered a retreat, and returning with his disappointed legions to the sea-shore, found that forty ships had been totally wrecked, and the rest so damaged that they scarcely seemed capable of repair. Then the carpenters of the army were set to work, other artizans were sent for from Gaul, ship-building commenced upon the British coast, and the ships, for better security, were drawn upon dry land, in the immediate vicinity of the camp. Such is the history of the grand Roman fleet, whose exploits contributed largely to the fame of Julius Cæsar!

Let us now contrast the coracle of the ancient Britons, or the

proudest vessel of the Roman fleet, or the whole fleet collectively, with the most recent triumph of naval architecture. Nineteen centuries ago our forefathers constructed their rude boats by covering a description of wicker-basket with the hides of buffaloes. Some historians have conjectured that they also had larger vessels, and that those boats were so frequently mentioned by ancient writers on account of their singularity. We must, however, bend to the authority of Cæsar, whose conquests were effected upon the sea coasts, and who, from a general disposition to exalt his feats of prowess, would certainly have mentioned the British ships, if any such existed. Not only did the

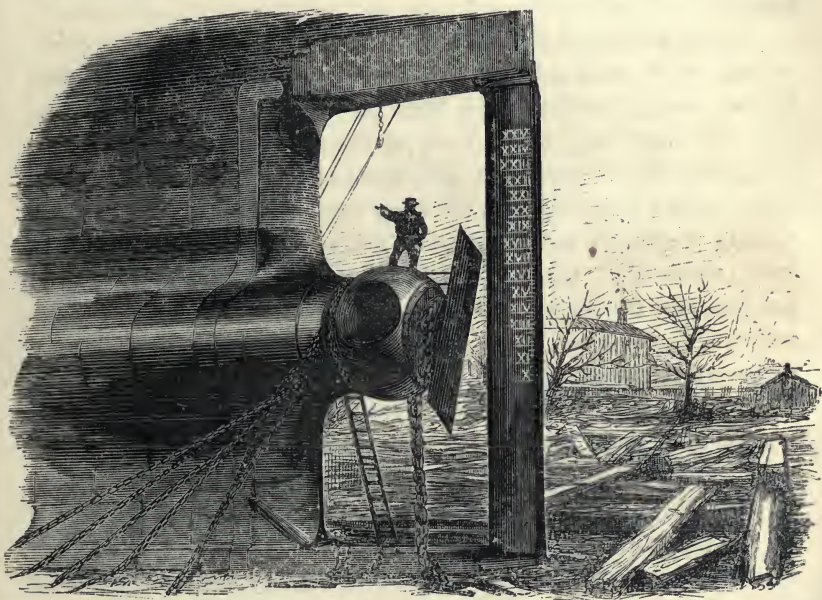


CORACLES OF THE ANCIENT BRITONS.

Britons oppose no naval resistance to Cæsar, but they appear not to have had a single vessel by which they could watch the motions of his fleet. The descent of Cæsar upon the British shore was, therefore, a matter of sudden surprise to the Britons, so far as the time and place were concerned. The voyages that were made in those small coracles appear to have been undertaken only in the more temperate seasons. Solinus confirms this view, saying, that "the sea which flows between Britain and Ireland is so unquiet and stormy, that it is only navigable in summer, when the people of those countries pass and repass it in



small boats made of wattles; and covered carefully with the hides of oxen." Had they other and larger vessels, they would scarcely have limited their voyages to the extent indicated, or have performed them, even in the more favourable season, in coracles of wattles. Those boats doubtless varied in size, according to their employment, either on the sea-shore, or in rivers and shallow waters. Sometimes the coracles were carried in carts many miles overland, to meet the water; upon other occasions, the navigator, returning to the shore, swung his boat across his back and bore it to his hut. A superstition is said to have prevailed among the Britons, which prohibited their taking food during



STERN-KEEL AND SCREW-SHAFT OF THE LEVIATHAN.

a voyage. This alone would prevent their undertaking to make sea passages of any considerable extent. The statement can scarcely be received, except with some reservation, for Timæus, a very ancient historian, related that the people of Britain used to voyage to an island at the distance of six days' sailing; and he also says, that the boats in which they made those long voyages were made of wattles, covered with skins. Superstitions, creeds, and prejudices, have always been found to yield to necessities. It is not improbable, therefore, that when the Britons undertook those long voyages, they received some



kind of dispensation to release them from the bonds of superstition, and permit them to satisfy their appetites.

Of the dimensions of the ships of the Roman fleet, some idea may be formed when it is remembered that in his second invasion eight hundred vessels are stated to have conveyed 32,000 men to these shores, besides 2000 horses. These figures are liable to much doubt, since they are founded solely upon modern calculations of the number of men composing the legions which Cæsar states to have accompanied him. According to the statement given, each ship must have been large enough to transport four hundred soldiers, independently of the horses.

Setting the doubts respecting the dimensions of those vessels aside, we may gather some idea of the "sea worthiness" of the Roman fleet by the repeated disasters which befel it. In the two expeditions the ships were severally driven back, scattered, and wrecked. But we learn more of their probable dimensions and strength when we read, from Cæsar's own account, that upon one occasion, forty ships were entirely destroyed, and the rest so much damaged that they were hardly repairable. He immediately set to work all the carpenters of the fleet, sent for others from Gaul, drew all his ships on shore, and enclosed them within the fortifications of his camp; and, by the vigorous and incessant toil of the whole army, this was accomplished in the short space of ten days.

We turn now to contemplate the grandest and the most recent work of naval architecture. Lying off the town of Deptford, like an unfinished world undergoing the preparations that are to adapt it to the reception of human beings, there floats the Leviathan, upon those waters on which, in the dawn of our nation's story, our ancestors paddled to and fro in their coracles of wattles and hides. There she floats, in peaceful majesty, already a proud monument of the victories of Mind and Industry, and the boldness of British enterprise. Men of every clime—the Ethiopian, the Arabian, the Asiatic, the American, gaze upon her with wonder, as they pass her towering sides in the humbler craft that ply the busy river. Princes have visited her, and paid homage to the heaven-born genius and the industrious hands that have united to send forth from the Thames so glorious an evidence of youth and vigour still animating the souls of the children of Old England.

The power and success of this Ocean City are, to some extent,

matters of speculation. But the day has come when mankind may have confidence in this, that whatever the spirit of Progress proposes, it has the power ultimately to accomplish. Times have been, and unfortunately too often, when the nation's means and sinews, drained by distracting wars, its heart crushed by internal discord, and mind cramped by rampant bigotry, the hand of Progress has been paralyzed, and has been deterred from attempting, or marred in performing, the works which its genius had projected. But ever when the weight of folly and oppression has been diminished, and the bandage of bigotry removed from the people's eyes, a noble army of inventors and labourers have gone to work for the good of themselves and of mankind. They have made the world their workshop, and the elements their material. This applies not alone to the inventors of vast schemes, and the investigators of deep problems, but to every one "who holdeth the plough, and glorieth in the goad that driveth the oxen, and is occupied in their labours, and whose talk is of the breed of bullocks. He that giveth his mind to make furrows; and is diligent to give the kine fodder. So every carpenter and work-master that laboureth night and day; and they that cut and grave seals, and are diligent to make a great variety, and give themselves to counterfeit imagery, and watch to finish a work. The smith also sitting by his anvil, and considering the iron-work; the vapour of the fire wasteth his flesh, and he fighteth with the heat of the furnace; the noise of the hammer and the anvil is ever in his ears, and his eyes still look upon the pattern of the thing that he maketh; he setteth his mind to finish his work, and watcheth to polish it perfectly. So doth the potter sitting at his work, and turning the wheel about with his feet, who is always carefully set at his work, and maketh all his work by number; he fashioneth clay with his arm, and tempereth it with his feet; he applieth himself to lead it over; and he is diligent to make clean the surface. All these trust in their hands; and every one is wise in his work. Without these a city cannot be inhabited."

The Leviathan is the work of such hands. Long before she grew into actual existence, she was seen in the "mind's eye" of one of those great translators of the ideal into the actual, whose triumphs over natural obstacles eclipse the victories of Alexander—Cæsar—Napoleon—Wellington! The astronomer excites our wonder by penetrating illimitable space, and discovering celestial gems shining in the solemn darkness of an unbounded solitude. But the inventor of a thing

hitherto unknown, the speculator upon a problem untried, dives into greater depths, and from a more ethereal essence than that which fills the vast universe of space, calls into existence a new creation: thus, from a thought which may have flitted in the darkness of night across a sleepless brain—a brain ever probing the depths of the unknown and the untried, for some new triumph over difficulty—came the first conception of the Leviathan, which, like a phantom-ship, must have passed and repassed the sea of imagination until the true moment of inspiration came, when her lines, which at first existed only in the realms of



PICTS OF THE NORTH.

fancy, were transferred to paper, and the ideal thenceforth became the actual. From this we see how erroneous is the view of those economic theorists who contend that only those who labour bodily are producers—all else consumers and absorbers of the wealth created by mankind. A thought kindled in the mind of an earnest thinker, and directed to some object of practical good, may open mines of wealth, give work to thousands, and add vastly to the happiness of mankind.

Compare the coracles of our British forefathers with the floating city whose majestic form will soon ride upon the heaving bosom of the waves. See the proportion which man bears to his works of eighteen



hundred years ago, and those of the present day. Standing upon the work of his own industry, man seems little more than a speck—like an eagle, whose form may be dimly descried upon a mountain peak.

One vessel, of the capacity and speed of the Leviathan, would have accomplished more than the whole of Cæsar's fleet of eight hundred ships. It would have crossed the channel before the Roman vessels could get into position to disembark their legions. And in four trips it would have landed his army of 32,000 men upon the British shores.

This city of the seas is provided with accommodation for 4,000



CALEDONIANS.

passengers, independently of her crew—a number equal to the population of some of our flourishing towns. But she might, upon an emergency, carry 10,000, allowing them the usual accommodation afforded to troops. She will travel at the rate of twenty miles an hour, will reach the antipodes in from thirty to thirty-five days, and will then lie keel upwards towards the point from which she sailed! She will make her way against wind and tide with the power of two thousand six hundred horses. Her five saloons will afford accommodation equal to that of five of our celebrated hotels; while her deck will afford a vast area, a

promenade around which will be equal to a quarter of a mile. Her screw propeller is twenty-four feet in diameter, and its shaft is one hundred and twenty feet long; the diameter of each paddle-wheel is fifty-six feet—considerably larger than the circus of Astley's theatre. She will carry twenty large boats on deck, and will bear on her sides two screw steamers, each one hundred feet long, and between sixty and seventy tons burden. There will be an electric telegraph on board, to communicate orders simultaneously from the officer in command to the distant parts of the ship. She will be lit by gas, which will be made on board; and the electric light is designed to shine like a star of the first magnitude from her mast-head!



The following table contains a list of the principal powers and dimensions of the Leviathan, as given by the designer, Mr. John Ericsson, in a paper read before the American Society of Mechanical Engineers, on the 10th of March, 1859. The table is given in the original form, and is not intended to be a complete list of the powers and dimensions of the ship, but only of the principal ones. The table is given in the original form, and is not intended to be a complete list of the powers and dimensions of the ship, but only of the principal ones.

### CHAPTER III.

#### THE MANNERS AND CUSTOMS OF THE ANCIENT BRITISH PEOPLE.

A RAPID sketch of the manners and customs of the Britons will be interesting as a starting point for the contemplation of those numerous works of Progress which have metamorphosed the whole aspect of society, and given to the humblest man in the State powers and pleasures which even a little span of time ago kings could not enjoy.

Cæsar distinctly states that all the Britons used to dye themselves with woad, which imparted to their skins a blue colour. He assigns as the reason for their doing so, the desire to make themselves appear more terrible in war; for which reason also, it is said, the men tattooed themselves in various parts of the body with the forms of ferocious beasts. Herodian says that they knew no use of garments at all, but wore about their waists and necks chains of iron, supposing them to be a goodly ornament and a proof of their wealth. Pliny adds another ornament, and says that they wore rings on their fingers. Herodian further adds, that they marked their bare bodies with sundry pictures, representing all manner of living creatures; and therefore they would not be clad, for hiding the gay paintings of their bodies. According to the testimony of Cæsar, they allowed the hair of their heads to grow long, and it was naturally curled, and of a yellow colour. They shaved all other parts of their bodies, except the upper lip.

As various authorities differ to some extent in their description of the Britons, it may be understood that the manners and customs of different tribes were dissimilar, and hence arose the discrepancies to be found in the early histories. It appears pretty clearly established that among those tribes that wore clothing, the skins of beasts for a considerable period formed their only attire, and that those skins were frequently cast aside, just as our warmer garments may be in these days; and thus the same people went sometimes clad in skins, and at other times naked.



Dr. Henry, a very careful inquirer into the manners and customs of the ancient Britons, gives the following account of the first progress of the British tribes from their nude condition to the habit of wearing garments:—The upper garment of the ancient Britons, and of all other Celtic nations, was the mantle or plaid. This was a piece of cloth of a square form, sufficiently large to cover the whole trunk of the body, both behind and before. It was fastened upon the breast, or one of the shoulders, with a clasp; or, for want of that, with a thorn or sharp-pointed piece of wood. As this garment succeeded the mantles made of skins of some of the larger animals, which had formerly been worn by the Celtic nations, it was made to imitate those skins in their shape and form; and in several countries, as particularly in Britain, those who were poor or less civilized still continued to wear skins, while those who were more wealthy or more improved were clad in plaids. Not only did the plaids or mantles of cloth which were first used resemble the mantles of skins which they had worn before in their shape, but also in their appearance, and in other respects, being all of one colour, smooth on the inside, with long hair, either straight or curled, on the outside, not unlike the rugs which are still used in some parts of Britain by the common people upon their beds. Those plaids, or rather rugs, when they were first introduced, were esteemed so precious and so great a piece of luxury, that they were only used by persons of rank and wealth, and by them only in the winter season when they went abroad, being carefully laid aside in summer or when they were within doors. By degrees this garment became more common, and was worn by persons of all ranks and at all seasons, at home as well as abroad, the mantles of skins being no longer used. As those most ancient plaids were made of coarse wool, ill dressed, and spun in yarn of a great thickness, they were only one degree more comfortable than the skins to which they succeeded, and were particularly inconvenient in the summer season on account of their weight. This put the British weavers, now become a little more expert in their business, upon making others of fine wool, better dressed, and woven the same on both sides. These were worn at first by persons of distinction, and in fair weather.

For a considerable time the ancient Britons, and other Celtic nations, had no other garments but their plaids and mantles, which, being neither very long nor very broad, left their legs, arms, and some other parts of their bodies naked.

As long as the ancient Britons and other Celtic nations only

covered their bodies with their plaids or mantles, leaving their arms, thighs, and legs naked, it is not to be imagined that they had any covering either for the head or the feet; but after they had provided garments for all the other parts of the body, they would naturally begin to think of some kind of covering for its extremities. Some of these nations, and perhaps the Britons, had no other shoes but a piece of the skin of a horse, cow, or other animal, tied about the feet, with the hair outwards. From a figure of a British captive on a Roman monument in Glasgow, it seems probable that the common people wore a kind of cap on their heads very like the bonnet which is still used in the highlands of Scotland. The dress of the women in the time of Boadicea may be gathered by the description given by Dio of the dress which that heroic queen herself wore:—"She wore a tunick of various colours, long and plaited, over which she had a large and thick mantle. This was her common dress, which she wore at all times; and upon occasions of war she bore a spear."



ROMANS.

The Roman conquest made a considerable change in the dress and clothing of the people. Not a few of them, and particularly of their young nobility, adopted the dress as well as the language and manners of their conquerors.

Speed remarks of the diet of the Britons, that their religion prohibited



them from eating either a hen, a hare, or a goose; yet they bred those animals as a matter of fancy. Neither did they feed daintily at full and rich meals, but could in necessity live upon barks and roots of trees. They are said to have had a kind of meat, of which a small piece no bigger than a bean would stay their hunger. This was probably some narcotic preparation of herbs. The ruder tribes tilled no ground, neither did they catch fish, although the rivers were abundantly stored therewith; but they lived upon the plunder which they obtained from the more frugal tribes, or subsisted by the hunt upon venison, to which they added wild fruits. They used milk and butter, but were unacquainted with the method of making cheese; they also had a drink which was made of barley. One authority only accuses our ancestors of cannibalism. St. Jerome is said to have written to this effect:—"When I was a young man, I saw in Gaul the Attacotti, a British nation who fed on human flesh. When they found in the woods herds of hogs and cattle, and flocks of sheep, they used to cut off the buttocks of the herdsmen and the breasts of women, esteeming those parts of the body the greatest dainties." This assertion, however, is generally discredited. St. Jerome was a boy about the middle of the fourth century, at which period it is highly improbable that cannibalism prevailed among even the most barbarous of the tribes, supposing it ever to have previously existed. The story told to St. Jerome, when he was a little boy in Gaul, was probably one of those mischievous inventions too frequently employed, even in the present day, to alarm children, and make them afraid of something terrible or unnatural.

The cookery of the ancient Britons was limited to a few very simple processes. Some of the Celtic nations had the art of roasting acorns and other wild fruits, grinding them into meal, and making them into a kind of bread. The following is said to have been their method of cooking venison:—A pit, lined with smooth stones, was made, and near it stood a heap of smooth flat stones of the flint kind. The stones, as well as the pit, were heated with heath; then they laid some venison at the bottom, and a stratum of stones above it; and thus they did alternately till the pit was full. The whole was covered over with heath to confine the steam.

They eat only twice a day, making a slight breakfast in the forenoon, and a supper towards the evening, when the labours and diversions of the day were ended. The last was their chief meal, at which, when they had an opportunity, they ate and drank with great freedom, or even



to excess. On those occasions the guests sat in a circle upon the ground, with a little hay, grass, or the skin of some animal under them. A low table, stool, or block of wood, was set before each person, with his meat upon it. In this distribution they never neglected to set the largest and best pieces before those that were most distinguished for their rank, their exploits, or their riches. Every guest took the meat set before him in his hands, and, tearing it with his teeth, fed upon it in the best manner he could. If any one found difficulty in separating any part of his meat with his hands and teeth, he made use of a large knife that lay in a particular place for the benefit of the whole company. Servants, or young boys and girls, the children of the family, stood behind the guests ready to supply them with drink, or anything they wanted.

The dishes, in which the meat was served up, were either of wood, or earthenware, or a kind of basket made of osiers. These last were most used by the Britons, as they very much excelled in the art of making them, both for their own use and for exportation. The drinking vessels of the Gauls, Britons, and other Celtic tribes, were, for the most part, made of the horns of oxen and other animals; but those used among the Caledonians consisted of large shells, which are still used by some of their posterity in the Highlands of Scotland. Their houses have already been described as circular, the fire-place being in the centre, with a large chimney, which, with the door, constituted the only sources of light. The doors were high and wide, and it was not uncommon for a horseman upon a journey to ride into a house, converse with the inmates, still keeping upon horse-back, and when his interview had ended, kicking the sides of his steed, and making his exit without having alighted. Their beds were made upon the floor by the skins of beasts, or coarse woollen garments, which they wore in the day-time, and a whole family slept in a circle around the fire-place.

Cæsar alleges that their wives were ten or twelve, and says that they held them common among brothers and parents; but the issue was reputed his who first married the mother when she was a maid. It is not, however, improbable that Cæsar was led into error in his estimate of their marriage institution on account of the promiscuous manner in which they lived. The revolt of a number of the formidable tribe of the Brigantes against their Queen for having proved false to the king, is a clear indication that marriage was regarded, by some of the tribes at least, as a sacred institution.

Cæsar says that the traffic they held between themselves, was not of much worth; and it should always be remembered that he speaks of the more advanced tribes whom he conquered in the southern part of the island. The coins which they had were either of brass, or else iron rings, and bits of metal cut to certain weights.

He describes their system of warfare thus:—They ride about all parts of the battle casting their darts; and oftentimes, with the terrible noise of their horses, and the rattling of their chariot wheels, they amaze the enemy and break their array. And when they have wound themselves in among the troops, they leap forth from their waggons and fight on foot. In the meanwhile the waggoners withdraw themselves somewhat out of the battle, and set their waggons in such order that, if they be overcharged by the enemy, they may have speedy and easy recourse to them; by means whereof they are as ready to remove as horsemen, and as stedfast to stand in the battle as footmen, and supply both duties in one; and they are come to such perfectness by daily practice and exercise, that even in steep and falling places, they will stop their horses running a full gallop, and guide and turn them in a short room, and run upon the verges, and stand upon the beams, and quickly recover themselves back again into the waggons. The chariots, or more properly waggons or low carts, which they used in battle, appeared to be common only to the southern tribes, no mention of them being made in the account of the battles with the tribes in the interior of the country.

The women appear to have borne arms together with the men; and certain it is that many of that sex were renowned for courage among them. But besides the use of arms, the British women had another employment in the field. Tacitus tell us that when Paulinus Suetonius attacked the Druids in the isle of Mona, the British army stood on the shore, thick of men and munition, and women running up and down among them like furies, carrying burning firebrands, in rueful attire, and with their hair hanging about their shoulders. The Druids, meanwhile, went with their hands lifted up to heaven, pouring out prayers and imprecations. The strangeness of which sight so amazed the Roman soldiers, that they stood stock still, while the others wounded them at their pleasure, till Paulinus encouraged them, and appealed to them not to be so daunted by an army of women and wizards.





# DISTRIBUTION of the Ancient BRITISH TRIBES.



## CHAPTER IV.

### THE ANCIENT BRITISH TRIBES.

THE several tribes which occupied this island appear to have been constantly at war with each other, prior to the Roman invasion. No idea of a common nationality prevailed among them. The tribes of South Britain, however, entered into a confederacy to resist the Romans, and appointed Cassibelanus, the chief of the powerful tribe of Catieuehlani, to be the commander of their united forces. But so weak were the ties of this confederacy, that it soon dissolved, several of the other states making peace with Cæsar, leaving Cassibelanus alone in his resistance to the Romans. One motive of the tribes for submitting to the Romans was the hope of obtaining the overthrow of Cassibelanus, who had long been an antagonist from whose encroachments they had suffered much.

Although those tribes were generally at war, and the Britons looked upon fighting as their daily occupation, some of the ruder tribes subsisting by plundering the cattle and corn of the more privileged communities, yet there are evidences of friendly relations subsisting between them, as occasion demanded.

Hospitality and kindness to strangers, when not at war, is set forth as being one of their most remarkable virtues. As soon as they beheld the face of a stranger, all their haughtiness and ferocity were laid aside; they felt the sincerest joy at his arrival; accosted him with the most friendly greetings; and gave him the warmest invitations to enter their doors. It was even esteemed infamous for a chieftain to close the door of his house at all, lest, as their bards said, "the stranger should come and behold his contracting soul." As soon as the stranger accepted the friendly invitation, and entered the hospitable door, water was presented to him to wash his feet; and if he received and used it, and at the same time delivered his arms to the master of the house, it

was understood as an intimation that he designed to favour him with his company for some time. An entertainment was then prepared, as sumptuous as the host could afford. After the entertainment had concluded, the host might, without any breach of the laws of hospitality, enter into familiar conversation with his guest, ask his name, from whence he came, whither he was going, and such questions. As long as the stranger stayed, his person was esteemed sacred and inviolable, the season was devoted to festivity, and every amusement in the power of his host was procured for him, to make him pass his time agreeably, and prolong his stay. Before his departure, it was usual for the stranger to exchange a sword, spear, shield, or some piece of armour, with his hospitable entertainer, and these they preserved as marks of mutual friendship, and the rights of hospitality established between them and their families and posterity.

As war was the favourite profession of the Britons, they had many remarkable customs in the prosecution of it. Our knowledge of some of these customs are derived from purely conjectural sources, yet the following, which are among the most clearly established, will be regarded with interest. When an unfortunate chieftain implored the protection and assistance of another, he approached the place of his residence with a shield all bloody in one hand, to intimate the death of his friends, and a broken spear in the other, to represent his incapacity to revenge them. A prince having immediate occasion for the assistance of his warlike followers to repel some invasion, or engage in some expedition, besides striking the shield and sounding the horn, to give warning to those who were within hearing, sent the *cran-tara*, a stick burnt at the end, and dipped in the blood of a goat, by a swift messenger, to the nearest hamlet, where he delivered it, without saying one word but the place of rendezvous. This *cran-tara*, which was well understood to denounce destruction by fire and sword to all who did not obey this summons, was carried with great rapidity from village to village; and the prince in a little time found himself surrounded by warriors ready to obey his commands.

When one chieftain entered the territories of another on a friendly visit, he and his followers carried their spears inverted, with their points behind them; but when they came with hostile intentions, they carried them with the points before. An invading army never neglected to draw blood from the first animal they met with on the enemy's ground, and sprinkle it on their shields.



When a British prince gained a victory, he seldom neglected to erect some monument on the field of battle, to perpetuate the memory of his success. Those monuments consisted commonly of one large stone placed erect in the ground, without any inscription; of which there are many still standing in different parts of Britain. As British warriors had their arms put into their hands in public, and with various ceremonies, so they resigned them when they became old and unfit for the toils of war, in the same public manner, and with equal ceremony. When two British kings or chiefs made peace after a war, or entered into an alliance, they commonly confirmed the peace or alliance by feasting together, by exchanging arms, and sometimes by drinking a few drops of each other's blood, which was esteemed a most sacred and inviolable bond of friendship.\*

Every tribe had its own chief, or chiefs; and although the will of the chiefs was absolute, they used to call the common people together, and confer with them upon all matters concerning their general welfare. Of these petty kings, or chiefs, the historian Speed thus speaks:—

“Such was Cassibelan over the Tribonants; Cingetorex, Caruilius, Taximagulus, and Segonax, all four rulers together in Kent; Comius, supposed to be the king of the Attrebatii, and to be the same Comius of Arras, whom Cæsar employed to tease and worke the Brittaines to his subjection; Caractacus, the warlike king of the Silures; Galgacus, the worthy king of the Caledonians; yea, and euen women also, without exception of sex, held government among them, such was the faithlesse Cartismandua, Queene of Brigantes, and famous Boudicea, Queene of the Icenians. Whereby it seemeth that euery several prouince owed service and allegiance only to their own prince. And as their governments were confined unto certaine bounds and limits, so were the inhabitants diuided and distinguished by diuers names; of whom because we shall have occasion hereafter often to speak, it shall not therefore be amisse in this place once for all, tablewise, to lay down the same, whereby our narrations may passe vntroubled without more explanations.” (*See Map*, p. 29.)

Such were the people who early occupied this island, which has risen to great fame among the nations of the earth.

Where Cornwall now pursues its peaceful fisheries, and seventy thousand hands are daily employed in raising the mineral treasures of the earth; where Devonshire spreads its rich pastures, and grazes its

\* Dr. Henry's "History of England."

quiet herds—there flourished the *Danmonii*, a race remarkable even in those times for their robust natures and warlike courage. Carn Boscawen, in Cornwall, was the seat of the chief Druid of the *Danmonii*; the stones of their Druidical altars remain to this day. In Madern parish there was a holed stone used by the Druids for the purpose of drawing children through for the cure of diseases! In Devonshire, according to Geoffrey of Monmouth, the struggle took place between Corineus and Gog-Magog, in which the last of the giant race occupying this island was destroyed!

Where Somersetshire spreads its rich pastures, and where, in the midst of rural plenty and beauty, manufactories raise their tall chimneys, and flourish surrounded by fields of waving corn; where Wiltshire multiplies its sheep and swine, and contrasts its sterile plains with fertile valleys, and nests of manufacturing industry; where Hampshire displays its grand forests and extensive heaths; where the quick hammer of the shipwright is heard in the extensive dock-yards of Portsmouth; and where busy steamers from a neighbouring isle, or from far distant shores, disturb the slumber of Southampton waters—there flourished the *Belgæ*, a race of people who originally “were the most remote of old Gaul, as well in point of cultivation as in locality.”\* A very early account of Somersetshire describes it as “a vast wilderness, covered with brambles and briers, with thick woods extending every way, and with high mountains and amazing valleys.” To the north of Salisbury Plain, in Wiltshire, lies Stonehenge, one of the most interesting relics of Druidical antiquity. Many conjectures respecting the massive stones of Stonehenge have been indulged in. There remains, however, no doubt that it formed one of the chief temples of Druidical worship, and was probably the seat of their great assize. Skulls of cattle, sacrificed by the Druids, have been dug up in the immediate neighbourhood. Stonehenge was, in all probability, founded four hundred and five years prior to the landing of Julius Cæsar. It is believed to have been devoted to the worship of the Moon. There was a similar temple at Abury, which was the seat of the Arch-Druid of the *Belgæ*. There was also a similar temple in Somersetshire. Around Stonehenge are barrows, or burial-places of the Britons, which rise like waves upon the green plain, so numerous that “one may count fifty at a time, in the evening when the sloping rays of the sun shine on the ground beyond them.”

\* Camden.

Dorsetshire, now abounding in flocks of sheep, and wooded with luxuriant orchards, was then the settlement of the *Durotrigæ*, whose name was probably derived from the British words Dour, or Dwr, signifying water, and Trig, an inhabitant; meaning inhabiting near water or sea.\*

Where now are spread the fine corn-fields of Berkshire—where the waters of the Thames pursue their devious way, laving the fertile banks of green meadows and ducal parks—there dwelt the *Attrebatii*, a colony of people from Gaul, on the banks of the Seine. Comius was the chief



COIN OF COMIUS.

of this tribe. While Cæsar was pursuing his conquests in Gaul, he defeated Comius, who fled, with the remnant of his followers, to the sea-shore; but finding that the ships were aground, and that they could not, therefore, embark before the Romans would overtake them, he ordered the sails of the ships to be spread, notwithstanding that they lay dry upon the beach. Cæsar, seeing from a distance the swelling sails of the vessels, believed that Comius was already on the sea, and abandoned the pursuit. By this stratagem Comius and his followers escaped, and reaching Britain, founded the colony now described. Comius afterwards entered into friendly relations with Cæsar, and became his ambassador to the Britons.

Other tribes were located on the opposite side of the river. Buckinghamshire, Bedfordshire, and Huntingdonshire, formed the settlement of the *Catieuchlani*, over whom Cassibelanus was chief. These people were a very powerful tribe, constantly at war with their neighbours, upon whose territories they committed frequent depredations. But when the island was threatened by Cæsar, the southern tribes entered into an alliance for the defence of their territories, and placed Cassibelanus at their head. The warlike skill of the British chief occasioned great difficulties to the Roman arms; and,

\* Camden.



but for jealousies and antipathies between the subordinate chiefs, the success of Cæsar, partial as it was, would have been a very doubt-



COIN OF CASSIBELANUS.

ful issue. The tribes, breaking through their alliance one by one, sought to make terms of favour with the Romans, until at last Cassibelanus stood alone against the common enemy, and yielded only when every chance of success had fled.

Oxfordshire, now the seat of classic learning, proud in the splendour of its colleges and halls, was, with the picturesque county in which it stands, the seat of the *Dobuni*, who occupied also the county of Gloucestershire, and had their towns scattered upon the banks of the beautiful Avon, whose immortal bard has so powerfully told the most thrilling story of Saxon times.\* Of the Dobuni nothing more is known than that they suffered severely from the attacks of the Catieuchlani, and that Plautius, about the year 45, made terms with them, took them under Roman protection, and created garrisons among them for their defence.

Where Surrey displays its picturesque uplands, romantic heights, woodland dells, verdant valleys, and plains covered with waving corn—where Sussex spreads its broad downs, and lofty white cliffs look down upon the waters of the blue ocean—there lived the *Regni*, whose king was Cogidunus. The spot at present known as Holwood Hill, in Surrey, is said to have been the seat of the capital of the tribe. The Devil's Dyke, near Brighton, to which so many fashionables flock in the summer season, was a British earth-work, believed to have been constructed as a retreat for the distressed Britons. It is almost

\* Shakspeare's Tragedy of *King Lear* was first published in 1608, under the title of "Mr. William Shake-speare, his true Chronicle History of the Life and Death of King Lear and his three Daughters. With the unfortunate Life of Edgar, Sonne and Heire to the Earle of Gloucester, and his sullen and assumed humour of Tom of Bedlam."

certain that on the very spot where Brighton now stands—on the Esplanade, where throngs of pleasure-seekers pass to and fro, breathing the inspirations of the ocean winds, there once existed rude towns of the aboriginal people.

Where Kent displays its beautiful hop-gardens, rivalling the vineyards of sunnier climes, there flourished the *Cantii*. It was within the settlement of this people that Cæsar effected his landing upon two occasions; and with the *Cantii* his first battles must have been mainly fought. A portion of Dover Castle is said to have been of early British construction. The *Cantii*, in the time of Cæsar, had four kings, named respectively, *Cyngetorex*, *Carvilius*, *Taximagulus*, and *Senogax*. There is little doubt that before the landing of the Romans the space of



COIN OF SENOGAX.

country between Deptford and the Thames, as high up as Lambeth, was a swampy marsh, a great part of which was constantly overflowed by the tide, and quite uninhabitable. This marsh, with the channel of the Thames as its extremity, might be looked upon by the *Cantii* and the *Trinobantes* as a kind of barrier between them. The Romans afterwards, to secure this barrier, drained as much of the land as served their purpose, erected a station, and made roads to it; but on their further conquests they removed to the north side of the river, where London now stands; after which, neither of the above people claiming the drained district, it became part of the country of the *Regni*.\*

The counties of Middlesex and Essex formed the district of the *Trinobantes*. When we contemplate the vast city of London, with its two millions and a half of inhabitants, and think of the wonders of social, political, and scientific triumph that have emanated from it, it becomes curious to reflect that this, the greatest and richest city in the world, was founded by the Britons, in all probability many years before the Romans set foot upon our soil, and that it must have been

\* Camden.

originally a mere town, or series of straggling villages (such as we have already described), scattered along the south bank of the Thames. That learned antiquary and historian, Camden, speculating upon the origin of the name of London says—"For myself, as Cæsar and Strabo expressly say that the Britons give the names of cities or towns to woods and groves fortified by trees which they had cut down, and I am informed that groves in the British language are called Lhwn, I am almost inclined to think that London had its name from thence, as the city, by way of eminence, or the *city in the grove*." By others the name is said to be derived from Llyn-Din, meaning the *town on the lake*. The Trinobantes were the first people who submitted to the Romans, which they did on account of the oppressions of Cassibelanus and the Catieuchlani. They were, however, long regarded with prejudice by the contemporary Britons for having been the first to submit. Cassibelanus murdered Imanuentius, king of the Trinobantes, and drove the son of the king, and successor to the throne, Mandubratius, into Gaul, where he sought the favour and protection of Cæsar, who, the better to promote his own designs, succoured Mandubratius, and reinstated him on the throne of his kingdom. At a later period the territories of the Trinobantes, the Catieuchlani, and the Dobuni were united under the government of Cunobeline, a grandson of the British king, Lud. Cunobeline was at an early age taken to Rome, and educated in Roman manners; when he was set up over the three kingdoms, he exercised great influence with the Britons in favour of the Romans, and preserved the peace of the states for many years. He held his court at Camulodunum, now Maldon, in Essex, where it is said the first coins were struck in this country. Cunobelinus certainly

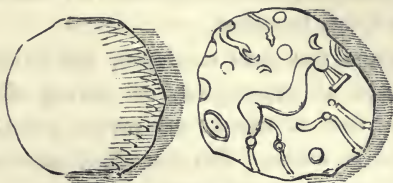


COIN OF CUNOBELINUS.

did institute and encourage coining to an extraordinary extent; no less than forty different coins have been satisfactorily traced to him, and are still preserved. It is probable, however, that the first British coins



were struck at Verulam, now St. Alban's (of which the annexed engraving is a specimen), before the Romans were in possession of that



EARLIEST BRITISH COIN.\*

place. One side of the coin bears no device, and on the other is a rude design, evidently intended, by the horse and wheel, to represent a war-chariot. This intention is sufficiently explained by another British coin, in which the war-chariot is more evidently indicated by the



BRITISH COIN.

attitude of the driver, and the horse which is galloping over a prostrate foe.

The districts now represented by Suffolk, Norfolk, Cambridge, and Huntingdon were peopled by the *Iceni*, who sustained a remarkable part in the troubled history of those early times. About the year 61, a revolt was commenced by these people, which had nearly proved destructive of Roman supremacy. The history of this revolt affords so good an insight into the turbulent and unsettled state of the times, that it should be given at length.

Suetonius succeeded to the government of Britain in the year 58. He found that the Druids were the greatest enemies to the Roman rule, stirring up "seditions" against their authority, and that the Isle of Mona (now called Anglesea) had become the stronghold of refugees, who fled before the advances of the Roman sword. He therefore

\* The money first used by the Britons consisted of rude pieces of brass, tin, and iron, formed into rings or other simple shapes. See the *Initial*, p. 55.

determined to conquer that island, and exterminate the last of the Druidical priesthood. For this purpose he collected the chief part of his army, and marched towards Mona. Of the occurrences there we shall have to speak hereafter.

Whilst Suetonius was thus employed, the Britons of the south determined to seize an opportunity of casting off the yoke. The Icenians were the first to stir in the revolt, and their example was soon followed by other tribes. The immediate cause which led to this formidable rebellion was as follows:—

Prasutagus, king of the Icenians, who had been during his reign a faithful ally to the Romans, died; and in order the more firmly to establish the peace of his state, he decreed a will, in which he made Nero joint-heir with his two daughters to all his effects. But his death was no sooner known than, tempted by his wealth, the Romans seized upon his possessions, and overran them with plunder and spoliation. The queen, Boadicea, remonstrating against these unjust



COIN OF BOADICEA.

proceedings, was seized by the soldiers, and scourged in a contemptuous manner, her daughters were violated, and all the relatives of the late monarch were reduced to indignity and slavery. The queen, being a woman of great courage, appealed to her people to avenge their wrongs, and, responding to that appeal, they determined to make a last struggle for the recovery of their liberty. Desperate in their rage, they rushed to arms, and were quickly joined by the Trinobantes. Among the latter, the Roman soldiers stationed at Camulodunum had exercised the most tyrannical power, thrusting the inhabitants from their houses, seizing their goods, and subjecting the people to the most ignominious treatment. Stirred to rebellion by these repeated injuries, they rose against their tyrannical oppressors, and, with burning hope of revenge, flocked to the standard of Boadicea. The Britons poured like an irresistible torrent upon the Roman colony at Camulodunum. The latter, unable to withstand the overwhelming attack, fled to the temple,

and defended themselves for two days, when the Britons forced an entrance, put every soul to the sword, and reduced the city to ashes.

As the Britons were retiring from the scene of their recent victory, they came upon the ninth Roman legion, which was advancing to the aid of the colony. The Britons suddenly surrounded them, cut to pieces all the infantry, and the cavalry escaped with great difficulty.

In the meantime, Suetonius, receiving information of these alarming events, left Anglesea with the greatest speed, and passing through a part of the enemy's country, hastened to London, which city still remained faithful to the Romans. As a stratagem of war, he determined to remove his troops from the narrow confines of the city, where they would fight under considerable disadvantages, and abide the issue of a battle upon an open plain. The inhabitants of London implored him to stay and protect them; but he knew that the issue would be a vital one, and he left the city, with its numerous inhabitants, to the doubtful mercy of an exasperated foe.

As soon as the Roman army had left the city, the Britons, with Boadicea at their head, entered it, and slaughtered all they found therein. From thence they marched on to the city of Verulam (St. Alban's), which they also conquered and despoiled. They retaliated the injuries they had received from their enemies with a terrible revenge; they would neither sell nor exchange prisoners, but either killed with the sword, gibbeted, burnt, or crucified all those who fell into their hands.

It is remarkable that this historical passage, with all its terrible features of outrage, oppression, rebellion, and massacre, should find so exact a parallel under British rule in India, after a lapse of eighteen hundred years! And why? Because the progressive lessons of experience have been forgotten. Thirst for dominion and wealth, without regard to the principles and rights that should ever attend the operations of enlightened governments, and regulate the intercourse of the pioneers of civilization even with barbarous people, has been as iniquitously indulged as if the conquerors of India had never read a page of history.

That the Britons were subsequently beaten in an open battle, that 80,000 of them were slain, and that Boadicea destroyed herself rather than yield to the tyranny of the Romans, are matters of history sufficiently authenticated. But even with this terrible defeat, the Britons were unconquered! A hundred and seventy years had rolled



away after this event, and yet the clash of British and Roman swords was frequently heard in various parts of the island. The ultimate subjection of the people was mainly due to causes to which we have already alluded at page 12.

The countries now divided into Rutlandshire, Northamptonshire, Leicestershire, Nottinghamshire, Lincolnshire, and Derbyshire were occupied by the *Coritani*. Warwickshire, Staffordshire, Shropshire, and Cheshire formed the settlement of the *Cornavii*.

The *Silures* occupied those parts which the Welsh in their language called Dehenbarth, or the south part, divided at present into the counties of Hereford, Monmouth, Glamorgan, Brecknock, and Radnor. Their king was Caractacus. The Silures, as described by Ptolomy,



COIN OF CARACTACUS.

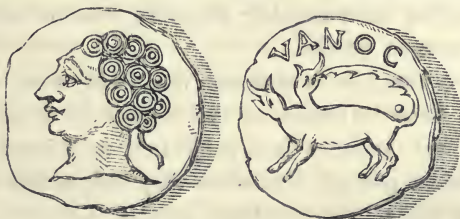
were a tribe distinctively marked from the other British people. Tacitus supposed them to have been originally Iberians. Their complexions were ruddy, their hair dark and curled; they were warlike, impatient of slavery, of great intrepidity, and exhibited a stubbornness uninfluenced alike by clemency or severity. The physical characteristics, as thus described, have come down with the inhabitants of Siluria to the present day, and confirm, in a remarkable degree, the description given of them in those early times.

When the Romans invaded their territory, they withstood so harassing a war, and inflicted such heavy losses upon their invaders, that Ostorius, the Roman general, died worn out with grief and difficulties, and Veranius, who subsequently attacked the Silures, did so in vain. Caractacus was, however, defeated and made captive. Being severely pressed, he retired into the dominions of the Ordovices, whose territory included a portion of Shropshire, and his last great battle was fought upon a hill, now called Caer-Caradoc (twelve miles from Ludlow). Caractacus fortified the hill with a rampart of stones, and held it obstinately against the Romans, until the latter effected breaches in the rude rampart, remains of which may still be seen, and drove the

Silures in disorder to the mountains. Caractacus fled for protection to the territory of the Brigantes; but the Silures were not reduced until the time of Vespasian, when Julius Frontinus conquered them, and placed garrisons of the legionary troops among them. Further mention of Caractacus will be made in the account of the Brigantes, and in the Chapter in which the general character of the Britons will be reviewed.

Pembrokeshire, Carmarthenshire, and Cardiganshire formed the settlement of the *Dimetæ*; and neighbouring these, and with them partaking of the general characteristics of the Silures, were the Ordovices, occupying the districts now known as Carnarvonshire, Flintshire, Denbighshire, Merionethshire, Montgomeryshire, and Anglesea (then called Mona). They were a robust and powerful people, keeping fast to their mountains. They continued to be independent of the Romans until the time of Domitian, when Julius Agricola reduced almost the whole nation.

Lancashire, Yorkshire, Cumberland, and Durham formed the kingdom of the *Brigantes*, the most numerous and warlike of the British tribes. Within the boundaries once occupied by this powerful tribe have sprung up those great marts of commercial and manufacturing industry—Liverpool, Manchester, Wigan, Bolton, Blackburn, Bradford, Preston, Newcastle, Sunderland, and a host of other places. The county of Lancaster alone now possesses a population double that of the whole island at the Roman period. The Brigantes probably derived their name from their piratical character. They committed such outrages among their neighbours, that Antoninus Pius on that account took away the greatest part of their territory. This tribe occasioned great trouble to the Romans, to whom they were at length subjected by the treachery of their queen, Cartismandua, a woman described as of



COIN OF VENUTIUS.

great power, invincible will, and noble birth. She dishonoured her king, Venutius, by taking his armour-bearer to her bed, and openly

espousing him on the throne. This led to a revolt among the people, and occasioned a fatal war. The husband had on his side the affection of his subjects; the queen resorted to the Romans for aid, which they, wishing for an opportunity of crippling the strength of the Brigantes, rendered her, and overthrew Venutius. Another circumstance which favoured Cartismandua with the Romans was, that when Caractacus was defeated, and fled to her for refuge, she had delivered him up to Ostorius, who sent him and his children captive to Rome.

The *Parisi* held a settlement adjoining to the Brigantes, and are supposed to have been a division of the tribe. They occupied the south-eastern angle of Yorkshire, now called Holderness.

Northumberland was occupied by the *Ottadani*, a people supposed to have been dependent upon, or confederated with, the Brigantes, in the same manner as the *Parisi*. Their name is probably derived from the situation occupied by them; it means beyond, or above, and was intended to indicate their situation with respect to the river Tyne—as above the Tyne.

Still further north, upon the borders of Scotland, were the *Picts*, a people peculiarly ferocious, who, together with the Scots, occasioned frequent troubles to the northern Britons by their predatory incursions. Some historians derive these people from the Germans, others from the Pictones of Gaul, while Bede says, that “the Picts came, as they report, from Scythia, in a few long ships, to Ireland,” and after in vain soliciting a settlement among the people whom they found there, at their advice came over to Britain, and established themselves. Whatever may have been their origin, there can be no doubt of the important part which they played in the history of the earliest times. Their name is said to have been derived from the habit of painting their bodies, which they adhered to when most of the other families of Britons had abandoned that custom—they therefore became distinguished as the Picts, or painted people.

It is scarcely possible to separate the Picts from the *Scots* and *Caledonians*, so little is known of the history of those tribes, which were never, in fact, brought into subjection to Roman rule, nor influenced by Roman polity. Doubtless they had, as was common with all the British tribes, frequent feuds among themselves. But upon every occasion, when the Roman power waned, or when the Britons, turning to works of industry, sought to improve their condition, hordes of these northern barbarians swept in upon them, and dealt murder



and spoliation on every side. The chain of forts extending from the Clyde to the Forth, erected under Agricola, and the wall of Hadrian,



COIN OF GALGACUS, KING OF THE CALEDONIANS.

though immensely strengthened by Severus, were but feeble defences for the Britons against the wild multitudes that besieged their barriers, and broke in upon their settlements in pursuit of plunder. The history of the Britons, for a period of nearly five hundred years after the first Roman invasion, is little more than a continuous story of bloodshed and misery. Invaded from the south by a powerful and disciplined foe; overwhelmed on the north by barbarian tribes, bursting in from a barren country, like hungry wolves, to feed upon their prey; themselves occupying every interval of time and opportunity with intestine strife, and sanguinary struggles which wasted their own strength; no wonder "that grievous famine increased; that they abandoned their cities and fortifications, and took to flight from a ruthless enemy, by whom they were rent in pieces like lambs in the hands of bloody butchers, or in the jaws of savage beasts; no wonder that the poor distressed people forbore not to rob each other of the little sustenance they possessed, and so increased their hostile oppressions by domestic vexations,"\* until, sinking under despair in the year 428, they petitioned the Emperor Honorius for protection, saying—"THE BARBARIANS BEAT US BACK TO THE SEA; THE SEA AGAIN DRIVES US BACK UPON THE BARBARIANS: THUS, BETWEEN TWO KINDS OF DEATH WE ARE EITHER SLAUGHTERED OR DROWNED!"

Notwithstanding these calamities, do we not see, even to this day, in the men of Scotland, the Northumbrians, the Welsh, the Cornish, and the Southern English, the strong impress of those original features which the Roman annalists so faithfully depicted? The infusion of

\* Speed.

Saxon and Norman blood, while it modified the physical constitution of the aboriginal races, still left the old British types in the ascendant.

When we look back to those troubled times, and count the years that have rolled away, we find that we are only removed therefrom the life-times of some twenty men; and yet from that barbarian stock has sprung a race that are now regenerating the world!



BRITISH WAR-CHARIOT.







BRITONS RETIRING FROM A DRUIDICAL TEMPLE, AFTER WORSHIP.

## CHAPTER V.

### THE DRUIDICAL RELIGION OF THE BRITONS.



THE Druidical religion of the Britons was one of the most profound and poetical superstitions that ever absorbed the minds of men. Its deities were an unknown Spirit, gods visible in the Sun, Moon, and Stars, moving everywhere in the elements, inhabiting sacred groves, dwelling in the waters of wandering streams, or hidden in mysterious caves. Thus the great mystery which surrounds the universe, the mysteriously grand phenomena which are witnessed in it, and the

beautiful and more comprehensible things of the earth, all lent their aid to enchain the minds of the untutored races, and to give to the priesthood unbounded power over the people. Those who could not be subdued by the awe or beauty of these superstitions, were operated upon by the mysterious rites of the Druidical priests, and made to tremble at the feet of altars reeking with the blood of sacrifices.



“Religious superstition,” says Strutt, “is easily raised in ignorant and unenlightened minds; every people, however barbarous, have some faint ideas of a Being to whom they owe their existence; and those weak sparks of fire may, without much difficulty, be blown up into a flame of zeal by others, who appear to be better acquainted with sacred matters, or more holy than themselves. Thus, all nations have religious rites, and priests to assist their offerings to the superior powers. The Druids found it needful to call to their aid pretended miracles, and mysterious doctrines, assisted by solemn and unusual gestures, to strike upon their beholders; for, though the ignorant may have been easily persuaded to believe whatever should be told them of the wisdom and reality of their gods, yet the genius of mankind generally makes them fond of the wonderful, and impels them to esteem those things the most which they can the least comprehend. It requires a greater light than that which is barely afforded by Nature to conquer those prejudices, and lead a man to judge fairly for himself in matters which seem to be (and undoubtedly are) of such real importance to him. Hence it became necessary for the designing priests to keep their knowledge to themselves, and lead the generality of people into greater darkness than they were before. But lest some aspiring genius might spring up to discover the fallacy of their proceedings, and pluck the film from the eyes of the deluded multitude, a certain bound was set to their religious inquiries, and every individual strictly forbid, under pain of the severest penalties, to believe either more or less than what he had been instructed by the priests themselves. Yet, as something more than Nature and naked truths were required to keep the multitude in obedience, and make them quietly acquiesce in these arbitrary measures, the priests were not backward in the propagation of wonders and extraordinary events; whilst, by their mysterious actions, and pretending to secrets of the highest consequence, they secured the respect of the vulgar, who regarded them as the favourites of the gods. By such means they laid fast hold of the minds of their followers, so that they were ready to sacrifice their wealth, their families, nay, their own lives, at the shrine of that which has been proved to be a worthless invention. All the ancient records of the known world cannot furnish a more striking view of the prevalence of superstition in a people, or the arbitrary government of priests, than we find among the deluded Britons.

This superstitious religion formed a very considerable part of



the ancient government—the Druidical priests were the chief authority in the settlement of the affairs of the people. Besides their ministering at the altar, they were entrusted with the tuition of youth. They enjoyed an exception from taxes, and were never called upon to serve in wars; they determined controversies; decreed rewards and punishments; and if the offender did not abide by their sentence, he was forthwith excommunicated.

Under the general name of Druids were comprehended three different classes of religious men, who had separate functions to fulfil. The office of the first class, the Bards, was to recite by music and poetry the deeds of great men and heroes; and to satirize and censure the conduct of evil men, and those who were public or private enemies. Their songs are described as being highly impassioned, and as exercising a surprising effect. When the Britons were engaged with a common foe, the bards would rush in among them, and by a rhapsody of blessings upon their arms, and curses upon their enemies, would inspire them to deeds of the highest courage and daring. At other times, when the British tribes had quarrelled, and their adverse ranks stood fronting each other in array of battle, their swords drawn, their lances pointing to each other, and waiting but the signal to begin the bloody conflict, the bards rushed in between them, and touching their harps with sweet harmony, and declaiming in impassioned words against the folly of the quarrel, so influenced the enraged Britons that they forgot their fierce resentment, and set aside their arms.

The following specimen of Druidical bardic composition, though derived from a much later period than that of which we write, is interesting. It is addressed by a Welsh bard to Rhys, one of the princes of that country:—

[*Translation.*]

“O thou, consolidator of the comely tribe!—Since I am returned home into thy dominion, to celebrate thee under heaven—O thou, with the golden, protecting spear, hear my bardic petition! In peace let us taste the cauldron of Prydain. Tranquillity round the sanctuary of the uneven number, with sovereign power extend! It (the bardic sanctuary) loves not vehement loquacity; it is no cherisher of useless sloth; it opposes no precious concealed mysteries (referring to Christianity): disgrace alone is excluded from bardic worship. It is the guardian bulwark of the breaker of shields. It is wise and zealous for the defence of the country, and for decent manners; a foe to hostile aggression, but the supporter of the faint in battle.”\*

\* Davis's *British Druids*.

This is one of the latest productions of Druidical song, derived from a time when the Druids, after the lapse of centuries, had resolved that Christianity might be "tolerated."

The next class of Druids were the *Vaits*, or prophets. These performed the principal parts of all the religious ceremonies, such as sacrificing victims, making offerings, and delivering poetic prophecies



THE ARMY OF SUTONIUS CROSSING THE MENAI STRAITS TO EXTERMINATE  
THE DRUIDS.

and predictions. They also composed sacred hymns in honour of the gods.

The third, and most numerous class, were the ordinary Druids. A great part of their employment was to make researches into the mysteries of Nature, to study the motions and appearances of the heavenly bodies, to estimate the magnitude of the universe, and of the earth, and to discourse of these things to their disciples.



Besides these there were different classes of Druidesses, of which there were those who vowed perpetual virginity, and dedicated all their time to the services of religion, living in lonely places, sequestered from mankind. They were much addicted to divination, prophecies, and miracles, by which they gained great influence among the common people. Another class of these religious females were married, but passed a great part of their time with the Druids, assisting in the performance of religious rites. And a third class performed menial offices about the temples, the sacrifices, and persons of the Druids.



BRITANNIA TUBULAR BRIDGE, ACROSS THE MENAI STRAITS. (See p. 54.)

These were not parted from their husbands, but governed their families, brought up children, and laboured at home when their attendance was not required by the Druids.

Over these several religious orders and grades there were a limited number of Arch-Druids, who held authority over certain districts, and who attended the more solemn festivals, and also what has been termed the great assize, in which various causes and disputes were heard and decided.

The Druidical doctrines consisted of two distinct systems; one



communicated only to those who were initiated, and admitted into their own order, and which they were bound by solemn vows never to divulge. So careful were they lest their secret instructions should be overheard, that they taught their disciples in the most private places, such as the caves of the earth, and the deep recesses of thick forests. These doctrines were not permitted to be written, lest they should be divulged to the common multitude. Their religious belief was, that after death the souls of men ascended to some higher orb, and enjoyed a more exalted state of felicity than they could experience in this world. This was probably to be the ultimate reward of man, as they also taught that the moment their souls fled from one body they entered other living and temporal bodies, and enjoyed a state of life proportionately honourable and happy to the valour of their former deeds. The tendency of this doctrine was to make them desperate in war, and to look upon death as a mere outlet of the spirit for an existence of greater happiness. They deified the Sun and Moon, and paid religious homage to trees, rivers, water and fire. Their philosophers taught that fire and water were the great elements that would revolutionize the world. If it were possible to give a succinct history of the religion of those early times, it would be shown that when the Romans first conquered the Britons, they sought to establish their own religion among them. The mythology of the Romans must have been regarded at first by the Druids as a baneful heresy; but as it spread among the people, as temples to the Pagan gods appeared in different parts of the island, and the followers of the Druids were becoming tainted with the new doctrine, the Druids were not slow in discovering that there was a harmony between their own mystical belief and the mythology of their conquerors. We accordingly find that in the Roman period Druidism partook of new mythological elements, and the churches rivalled each other in the homage they paid to the like gods. So, at another time we find the heathen mythologists persecuting and exterminating Christians; but, when they found they could not resist the spread of Christianity, they also discovered that there was an accordance between Paganism and the new faith, and became "tolerant" of that which they had tried to exterminate in vain. Were we to follow the parallel examples to be found in religious history, we should be brought down to a period which has its living witnesses. That duty, however, must be reserved for the Chapters upon the History of Opinion.

The Druidical worship and sacrifices were performed in sacred groves, and in open temples constructed of enormous stones. There were many such places in Britain, of which remains exist at the present day, and of these Stonehenge, Abury, Dartmoor, and Shap, in Westmoreland, afford the best examples. It was an article of the Druidical creed, that it was unlawful to worship the gods within walls or under roofs. Their temples were therefore constructed by placing enormous stones at considerable distances apart, the whole forming a circular area of vast dimensions. The hours for their religious services were probably at noon and night. At noon they paid homage to the sun, and at midnight to the moon and stars, and the mysterious powers of darkness.

Their sacrifices were not confined to beasts of the brute creation. We are told, upon the direct authority of Cæsar, that they delighted in human sacrifices, and that though the persons destroyed by these sanguinary rites were generally offenders against the law, or prisoners taken in war, there were occasions when, desiring to move the gods by special appeals, they not only sacrificed the innocent, but selected the most beautiful and virtuous for their horrid purpose. So much did they delight in human sacrifices, that they constructed large figures of wicker-work, effigies of the human form, and then, filling these figures with human beings, they set fire to the living mass, and ran, danced, shouted, and made the most discordant noises around the scene of the terrible immolation.

Another part of their system was to practice the arts of divination, professing to have the power to foretell events, to detect crimes, and to work charms. They divined matters by giving flight to birds, and observing the manner and the direction in which they took wing; by serpents' eggs; by the inspection of the entrails of victims slain in sacrifices. When great occasions required the consultation of the deities, a man was made the victim,\* and slain by a priest with one blow of a sword, struck above the diaphragm. By observing the posture in which he fell, his convulsions, and the direction of the blood which flowed from his wound, they made their predictions, according to rules secretly communicated from generation to generation of the priesthood.

The oak was held in great veneration amongst the Druids, especially when found with the mistletoe growing upon it. The trees under which they assembled to worship were the most majestic of the

forest, and the cutting of the mistletoe from the oak was a matter of great parade and solemnity. This was done on the 10th of March, their New-year's day, in the following manner:—First, they marched in solemn procession to the wood; then, having the sacrifices prepared under the tree, two milk-white bullocks were brought forth. The chief Druid, habited in a white robe, ascended the tree, and with a golden pruning-knife cut off the mistletoe, which was carefully dropped upon a white cloth held by persons standing below. Then many orations and incantations were pronounced over it, the bullocks were slain, and the mistletoe, thus hallowed, was carefully kept, and a decoction from it employed as an antidote for poison, a sure remedy for barrenness, and a cure for many bodily diseases!

No Druidical grove, we believe, now remains; but within little more than a century, ancient oaks were still standing around some of the circles of stones set upright in the earth, which are supposed to have been the temples of the old religion.\* The oak, under which the Druids performed their barbarous and mystic rites, was destined by the hand of human industry to be transformed into a noble ship, and to bear the pioneers of civilization into remote and still barbarous regions of the world!

These miserable superstitions of the Druids held such an ascendancy over the people's minds, and caused so many revolts against the Roman authority, such strife between the Pagans and the Druids, that the Romans determined to force Paganism upon the people at the point of the sword. They compelled the inhabitants of the conquered provinces to build temples to the Pagan gods, and perform sacrifices of beasts only, after the Roman fashion. They deprived the Druids of civil authority, and punished them with the utmost severity when concerned in any revolt. The disconsolate Druids, therefore, fled to Mona, where they strove to revive the hopes of their expiring authority. But Paulinus Suetonius, in the year 61, determined to pursue and exterminate them. He marched with a large army through the kingdom of the Ordovices, and crossing the Menai Straits by means of flat-bottomed boats, made a terrible assault upon the assembled Britons. The British army crowded the shore, resolutely determined to abide their last chance. Among the soldiers were women running up and down like furies, carrying burning firebrands, and with their hair flowing over their shoulders; the Druids ran to

\* *Pictorial England.*



and fro with their hands lifted up to heaven, while they poured out solemn prayers and dreadful imprecations. The strangeness of the sight so amazed the Roman soldiers, that they shrunk from the attack, until Suetonius encouraged them, saying, "Be not daunted by an army of women and wizards!" The Romans conquered, put the wretched Druids to death, destroyed their temples, cut down their groves, and overturned their altars. Those of them who escaped fled



DRUIDICAL SACRIFICES.

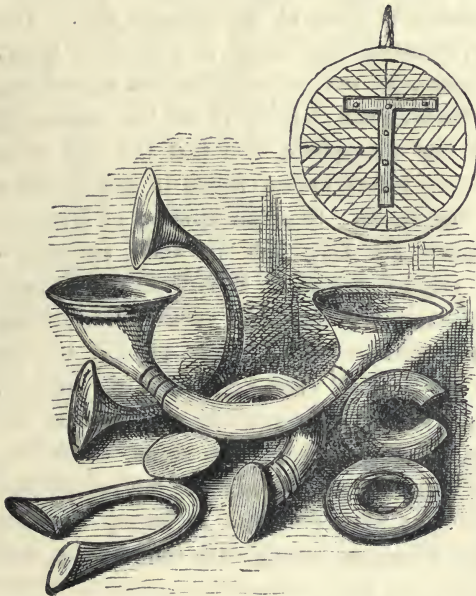
into Caledonia, Hibernia, and Mona (or further Mona, now the Isle of Man). But such a deep impression had the Druidical superstitions made upon the national mind, that, during the sixth, seventh, and eighth centuries, there were numerous edicts of emperors and canons of the councils against the worship of the sun, moon, mountains, lakes, trees, etc. Even so late as the eleventh century, in the reign of Canute, the following edict was issued:—"We strictly charge and

forbid all our subjects to worship the gods of the Gentiles; that is to say, the sun, moon, fires, rivers, fountains, hills, trees, or woods of any kind!"

It is remarkable that near the very spot where the last battle was fought, having for its object the extermination of a sanguinary and baneful superstition, there now stands a great monument of the triumphs of Progress. The Britannia Tubular Bridge crosses the Menai Straits near the place where the army of Suetonius fought the Britons who had assembled to guard the Druids, whom they revered as a sacred order of men; where women ran up and down like furies; and where the Druids were burnt in the fires they had kindled to sacrifice their enemies. No longer have we need of extermination: the aim and effort of to-day is to mingle the families of the human race, and to trust to the peaceful operation of Truth, to root out error and superstition, wherever they may still linger and clog the onward paths of men.

## CHAPTER VI.

OF THE LATENT MORAL AND INTELLECTUAL QUALITIES OF THE  
BRITISH CHARACTER.



HE vast strides of Progress which the British people have made within a comparatively brief space of history, render it impossible to escape the conclusion that there must have been among our ancestors elements of character favourable to the noble developments that have subsequently and rapidly taken place. Or why should they, who were barbarians when many

nations of antiquity boasted not only of civilization, but of refinement, have overtaken and far outstripped those nations, and gained for themselves the foremost position among the people of the earth?

Let not this proposition be said to savour of national vanity, since it is suggested not by a vain conceit, but by facts which are patent to the whole world. Some nations have achieved greatness from the period of the world's history when they were first founded; others, from the vastness of their undisputed possessions; others, from peculiar geographical advantages, and from physical circumstances which give energy and courage to the character of a people. It was not the period of our nation's foundation which fostered its



coming greatness: Egypt, Greece, and Rome, had gone before it in all the splendours and triumphs which the world then understood. The mere span of land which contributed to our entire dominion, proves that it was not our territory which constituted our greatness; and this view is strengthened by the fact, that the riches which we now possess internally were undeveloped for many centuries, and the entire island was, for a long period, so uncultivated that it afforded only a precarious existence to its inhabitants. Nor could it have been from our geographical or physical advantages, because, until Britain was cleared of swamps and woods, its atmosphere was far more humid and insalubrious than at the present day. The oldest writers agree in representing this island as a land of mists, surrounded by a dark and dangerous sea; a description not untruthful, when we consider that the draining and clearing of the land materially altered the constitution of our atmosphere, and that the seas must have been dangerous at a time before improvements in ship-building gave to man power over the waves. The immigration of Romans, Saxons, Danes, and Normans has been held by some authorities to have extinguished the original types of British character, and to claim for the immigrant races the credit for those characteristics of courage, daring, and perseverance which really belongs to the blood of the aboriginals. The physical characteristics of the Britons, as described by Cæsar and Tacitus, are singularly applicable at the present day. The Britons, on the parts of the island which lay opposite to Gaul, were described as generally being of fair complexion and light hair; the Caledonians were described as having red hair and muscular limbs; and the Silures as having dark complexions, and black and curly hair.

That they were a brave and energetic people rests not alone upon the willing testimony of Roman historians, but upon the facts of history already recorded, which show that the Romans, after the lapse of centuries, had not completely subdued the island. That they submitted to government when it was justly and mildly administered, is evident from Tacitus, who says:—"The Britons themselves cheerfully submit to conscriptions, taxes, and all other imposts, provided injustice be withheld; but this they will not patiently tolerate, being as yet merely reduced to obedience, and not to slavery."

In the absence of other materials by which we may judge of the

dormant qualities of the British people, we may turn to the speeches of some of their chieftains on the occasion of great battles, or under the disappointment of defeat, and we shall find therein expressed sentiments which would do honour to any people or any age, and figures of speech, and methods of appeal, that would have graced the oratory of Greece or Rome.

Caractacus, king of the Silures, having been betrayed into the hands of the Romans, was, with his wife and daughter, taken captive to Rome, and brought before Claudius. He was led in triumph through the streets of the city. First went the vassals of Caractacus, drooping their heads, and showing how deeply they felt the humiliation of their king. Then followed the caparisons, chains, and other paltry spoils taken in the war. After these went the wife and daughter of Caractacus, weeping at their degradation. Then came the stout-hearted chieftain: across his loins was slung the skin of a beast; the parts of his body which were revealed were painted with figures of divers beasts. He wore a chain of iron about his neck, and another about his waist; his hair hung down in curling locks, covering his shoulders, and the hair of his upper lip, parted on both sides, lay upon his breast. He neither hung down his head as daunted, nor craved mercy, but with a confident spirit, and high bearing, held on until he came into the imperial presence, and there addressing Claudius, he spoke in a firm voice to this purpose:—

“Had my moderation in prosperity been equal to the greatness of my birth and estate, or the success of my late attempts been equal to the resolution of my mind, I might have come to this city rather as a friend to be entertained, than as a captive to be gazed upon. Neither wouldst thou then disdain to have received me on terms of amity and peace, being a man of royal descent, and a commander of many warlike nations. But what cloud soever hath darkened my present lot, yet have the Heavens and Nature given me that in birth and mind which none can vanquish or deprive me of. I well see that you make other men's miseries the subject and matter of your triumphs, and in this my calamity, as in a still water, you now contemplate your own glory. Yet know that I am, and was a prince, furnished with strength of men and habiliments of war; and what marvel is it if all be lost, seeing experience teacheth that the events of war are variable, and the success of policies guided by uncertain fates. As it is with me, who thought that the deep waters, like a well enclosing our land, and it so situated by the gods as might have been a sufficient privilege and defence against foreign invasions; but now I perceive that the desire of your sovereignty admits no limitation; and if you Romans must command all, then all must obey. For mine own part, while I was able I made resistance; and unwilling I was to submit my neck to a servile yoke; so far the law of Nature alloweth every man, that he may defend himself being assailed, and to withstand force by force. Had I at first yielded, thy glory and

my ruin had not been so renowned. Fortune hath now done her worst; we have nothing left us but our lives, which if thou take from us, our miseries end, and if thou spare us, we are but the objects of thy clemency."

At a subsequent time, when walking through the city of Rome, and observing its grandeur, "Why," said he, "when possessed of such splendours as these, do you covet our humble cottages?"

The address of Boadicea, to her army, is even more poetical and patriotic:—

"My friends and companions of equal fortunes!—There needeth no excuse of this my present authority or place in regard of my sex, seeing it is not unknown to you all that the wonted manner of our nation hath been to war under the conduct of women. My blood and birth might challenge some pre-eminence, as sprung from the roots of most royal descents; but my breath, received from the same air, my body sustained by the same soil, and my glory clouded with imposed ignominies, I disdain all superiority, and, as a fellow in bondage, bear the yoke of oppression with as heavy weight and pressure, if not more! Had I, with Cæsar's mother, been suspected of treason, or with false Cartismandua, defiled my bed, and betrayed a faithful king, my goods might have gone under the title of confiscation, and the lashes of the whip which I have endured, under pretext of justice. But why name I justice in these grand catalogues of oppressions, whose actors respect neither person, age, sex, nor cause? For what abuse can be so vile, that we have not suffered; or indignity so contemptible, that we have not borne? My stripes, and the violent rapes of these my harmless daughters, against the laws of God and man, do witness well what government our enemies intend; and your wealths consumed by their wasteful wantonness, your painful travails upholding their idleness, does seal the issues of our succeeding miseries, if not timely prevented by our joint endeavour. You that have known the freedom of life, will with me confess that liberty, though in a poor estate, is better than bondage with fetters of gold. And yet this comparison hath no correspondence in us; for we now enjoy no estate at all, nothing now being ours but what they will leave us, and nothing left us that they can take away, having not so much as our heads toll free. Have the Heavens made us the ends of the world, and not assigned the end of our wrongs? Or hath Nature, among all our free works, created us Britons only for bondage? Why, what are the Romans? Are they more than men, or immortal? Their slain carcasses sacrificed by us, and their putrefied blood corrupting our air, doth tell us they are no gods. Our persons are more tall, our bodies more strong, and our joints better knit than theirs! But you will say—they are our conquerors. Indeed, overcome we are, but by ourselves, by our own factions, still giving way to their intrusions. For had not the dictator a Mandubrace? Caligula an Adminius? Claudius a Bericus and Cogidunus? Nero, Cartismandua—that strumpet, and our still living shame? Rome's instruments and Briton's vipers, without which you should see Cæsar in single fight lose his sword, and after fly the country; Tiberius forego his tribute; Claudius glad to make peace; and Nero might still have followed his fiddling trade at Rome, had not our discords at home made up his music here abroad. Our dissensions, therefore, have

\* Alluding to the British kings who had allied themselves with the Romans.



been their only rising, and our designs still weakened by home-bred conspirators. Neither hath our noble resistance ever been without desert or note of honour; their public triumphs being made more admirable by one Briton's conquest, than usually hath been solemnized over whole kingdoms. Caligula, for beholding our cliffs only, would have divine honours; and forgetful Claudius, remembered unto posterities, a glorious surname from us. Our strengths have been acknowledged the main support of other states,\* and shall it not be supplied to maintain our own? We have as much to keep as birthright has given us; that is, our land, possessed by our ancestors from all antiquity: ours by inheritance, theirs by intrusion; claims so different in the scale of justice that the gods themselves must needs redress, and set the balance in their equal poise. We have seen their propitious beginnings, in making us instruments over seventy thousand of our enemies; and yet in their revenge our forces not diminished, but much increased in number and power; which thing, as it serves to our encouragement, so it is to their fear. See we not the army of Plautius crouched together like fowls in a storm? If we but consider the number of their forces and the motives of the war, we shall resolve to vanquish or die. It is better worth to fall in honour of liberty, than be exposed again to the outrages of the Romans. This is my resolution, who am but a woman; you who are men may, if you please, live and be slaves!"

This speech is full of vigorous eloquence and patriotic feeling. Again, Galgacus, addressing his army of Caledonians when they stood on the Grampians, towards which the army of Agricola was advancing to attack them, said:—

"When I behold this present assembly, and consider the cause of this instant necessity, I have reason to presume that this day, and this our agreement in consent, will give a happy beginning to our freedom and an end of troubles unto our island. For we which inhabit these furthest promontories, know no land beyond us whereunto we may fly, nor no seas left us now for safety, the Roman navy (thus as you see) surveying our coasts; so that combat and arms, which men of valour desire for honour, the very dastard of force must now use for his security. We that are the flower of the British people, and are seated here in the uttermost parts of the isle, saw never yet the borders of those countries which served in slavery, our eyes being unpolluted and free from all contagion of tyranny. Our former battles fought with the Romans had their events, yet so that refuge and hope rested still in our own hands; we have hitherto lived in liberty, whereas none beside us are free; we hitherto this corner and secret recess hath defended, now the uttermost point of our land is laid open; and things the less they have been within knowledge, the greater the glory is to welcome them. But what nation is there now beyond us, what else see we but water and rocks, and the Romans within landlords of all, nay, rather robbers of all both on land and sea, whose intolerable pride by humble subjection in vain shall we seek to avoid? If the country be rich, they seek to win wealth; if poor to gain glory; but neither east nor west can satisfy their greedy affection, much less this cold north can set an end to their desire. To kill, to spoil, and take away by force, that, falsely, they term empire and government; and when all is made a waste

\* Alluding to the assistance rendered by the Britons to the Gauls against Julius Cæsar.

wilderness, that they call peace. Most dear unto man are his children and blood ; but those are pressed for their wars, and serve as their slaves we know not where ; our goods are their tributes, our corn their provision ; our wives, sisters, and daughters, in war violently forced ; in peace, under the title of friends and guests, shamefully abused, and our own bodies worn and consumed in paving of bogs and other servile drudgeries, with thousands of stripes, and many indignities more. Slaves which are born to bondage are sold but once, and after are fed at their owner's expense ; but Britany daily buyeth, daily feedeth, and is at charges with her own bondage. We are the last to be conquered, and therefore is our destruction most sought as being the most vile in account. No fields have we to manure, no mines to be digged, no ports to trade in, and to what purpose then should they reserve us alive ? Besides, the manhood and fierce courage of the subject pleaseth not much the jealous sovereign, and this corner being so secret and out of the way, the more security it yieldeth us ; in them it works the greater suspicion. Then, seeing all hope of favour is past, let us take courage to defend and maintain our own safety as well as our honour. The Icenians, led by a woman, fired the colony, forced the castles ; and if that lucky beginning had not been ended in a careless security, the southern Britons might, with ease, have shaken off the yoke. We, as yet, never touched, never subdued, and born to be free, not slaves to the Romans ; we (I say) now are to make proof of our valour, and to show in this encounter what men Caledonia hath reserved for herself. And do you think that the Romans are as valiant in war as they are wanton in peace ? I assure you nothing less ; for not by their virtues, but by our jarrings, they are grown into fame ; and of the enemies' faults they make use to the glory of their own army ; composed (we know) most of divers nations, and therefore, as in prosperity they hold not all always together, so doubtless, if fortune turn aside, their services will appear. Unless you suppose the Gauls and Germans, and (to our shame be it spoken) many of our own nation (which now lend their lives to establish a foreign usurper), be led with heart's affection ; whereas, contrariwise, it is apparent that terror and distrust (weak workers to conserve love) are the only cause ; which once removed, then those that have made an end to fear, will soon begin to hate. All things that may incite unto victory are for us ; the Romans have no wives to hearten them on, if they faint ; no parents to upbraid them, if they fly. Most of them have no country at all ; or if they have, it is by intrusion taken from others. A few fearful persons stand here before us, trembling and gazing at the strangeness of the heaven itself, at the sea, and at the woods ; whom the gods have delivered mewed up and fettered into our hands. Let not these brave shows of glittering gold or silver any way dismay you, which of themselves neither offend nor defend. And be you well of mind amongst our enemies we shall find many on our side. The Britons will agnize their own cause, the Gauls will remember their former liberty and wonted estate, and the rest of the Germans will leave and forsake them, as of late the Vsipians did. What then shall we fear ? The castles are empty ; the colonies peopled with aged and impotent persons ; the free cities discontent and in factions ; whilst those which are under obey with ill-will, and they which do govern rule against right. Here you see before us is the general and the army ; on each side tributes, servitudes, and other miseries inseparable, which, whether we shall continue for ever, or cast off subjection as free-born Britons, lieth this day in this field and your approved manhoods. Wherefore, I beseech you, in forming battle, bear in your minds your worthy ancestors, yourselves, and following posterities ; which, if you fail, shall for ever be in subjection and slavery."

From these addresses we learn that the British chieftains, though clad in the skins of beasts, had within them the souls of men and the hearts of patriots. Take, in comparison with the foregoing, the speech of Agricola, addressed to his soldiers prior to the battle with the army of Galgacus:—

“Fellow Soldiers!—The eighth year is now passing since, by the valour and fortune of the Roman Empire, and by your own loyalty and energy, you have conquered Britain. Throughout so many expeditions, so many battles—whether heroism against the enemy, or perseverance and toil in surmounting physical impediments, were called for, I have neither been dissatisfied with my men nor you with your commander. Having consequently overstepped the limits of former governors and former armies, we now occupy the utmost limit of Britain, not merely with our name and reputation, but with our arms and encampments. Britain has been discovered and subdued. Many a time, on the march, when fens, mountains, and rivers tried your perseverance, have I heard the bravest of you exclaim, ‘When is the enemy to show himself?’ ‘When shall the battle come?’ They are coming now, hunted from their lairs; your wishes and your valour have now an open field; all things lean toward the conquerors; all tells against the vanquished. For, though the performance of so long a march, the treading of the forests, the crossing of the estuaries, are creditable and glorious for an advancing army; still, our present greatest advantages would become our most serious dangers in retreat, because we have not the same acquaintance with the localities, or the same supplies of provisions—nothing but our hands and arms, and on these our whole dependence. For my own part I have been long convinced that a retreat is unsafe, both for troops and commander. An honourable death, therefore, is preferable to a life of degradation, and security and glory stand together; nor should it be discreditable to fall even in this verge of the earth and creation.

“If nations unknown, and an army hitherto untried, were marshalled against us, I would urge you by the examples of other armies. As it is, recount your own successes; question your own eyes. These are the men whom you defeated last year by a shout, when they treacherously attacked a single legion in the night; they are the most timid of all the Britons, and therefore so long in existence. As, in traversing the forests and the glades, the fiercest animals confront you in the consciousness of their strength, while the timid and harmless take flight even from the noise of an advancing host: so the most valiant of the Britons have long since fallen, and the remainder are a multitude of the helpless and the cowardly, whom you have found out at last; not because they awaited you, but because they are the last, and have been overtaken. They have placed their cause, and—in the agony of their terror—their bodies, where they now stand, and where you may achieve a glorious and imposing victory, have done for ever with the campaign, crown its fifty years with one great day, and satisfy the republic that the army cannot be charged either with a continuance of war, or a pretext for its renewal.”

There is nothing in this speech which might not have been addressed by a brigand to his band—no principle of justice, no sentiment worthy of humanity. And yet these Cæsars and Agricolas



have been deified by the ancients, and handed down to posterity as the great heroes of early ages, while our staunch old British ancestors have been almost forgotten, or merely mentioned as the most prominent among barbarians. Cæsar, describing the Gauls, said—"They accounted robbery honourable, provided it was not committed within their own tribes; they thought it gave occupation to their young men, and made them active." What were Cæsar and the Romans but robbers seeking possession without right, pursuing conquest without mercy? The want of a true sentiment upon this subject has perpetuated the war policy, and the profession of the soldier is still looked upon as one of the honourable callings of our times. A father, having two sons, determines one for the church and the other for the army, deeming the sacerdotal robe and the military cloak equal emblems of honourable distinction. This is almost the only matter of opinion in which we have stood still; but the time is coming when the last prop of iniquity must give way; when, if armies must still be maintained by external necessities, the sword shall never be unsheathed but in the cause of Justice.

The brief sketch which has been afforded of the British and Roman period, and which has been quite as ample as the reliable materials of history would allow, will serve as a starting-point for the inquiries we have to pursue in tracing the footsteps of Progress. As a railway practically reduces space; as a telescope brings distant objects near; and as a microscope reveals the unseen: so a faithful historical sketch condenses into one focus the events of ages, and enables us in imagination to reach the very poles of time, and to explore the antipodes of social conditions. We, who can breakfast in Edinburgh and sup in London, have in these brief recitals, been carried back to a period when Scotland and Ireland were *unknown* to England, and when the Roman generals would only venture upon expeditions of *discovery* in North Britain "*in the summer time!*"

Having sat with the Briton in his hut; having seized spear and shield and rushed forth with him when the cran-tara was planted in his village, and fiercely battled with a marauding neighbour, or a foreign foe; having stood before the Druidical altar, and shrieked with mad excitement when a human being has been ripped open, or the fires lighted around a living pile; having seen a successful robber become

the chief of a tribe, and found that in his position of chief he became the greater robber, we are able to estimate more fully the advantages of law and order that now exist, and to rejoice more sincerely in the security that dwells around our British hearths.

Having dwelt with a British tribe, and felt that their forests were the boundaries of freedom, and that to pass beyond those boundaries was to meet death; having wandered through their track-ways, and waded through their marshes and streams, hastening home lest the setting of the sun should cut us off from our village to become the captive of an enemy or the prey of a wolf, we can the better prize the Macadamized road, and the paved and illuminated street, or the flying train that bears us with bird-like speed to our domestic nests.

And when we shall have traced the steps of Progress, and learned how our present advantages grew; how difficulty after difficulty was overcome; prejudice after prejudice broken down; and triumph after triumph achieved; we shall be able to meditate not only upon that which HAS BEEN, but that which IS YET TO BE—we may find pleasure in the contemplation of Progresses that are to come, and share, by anticipation, those better things which our children will in their time enjoy.

Nor need we fear that a time of retrogression will come; that by too rapid a development we shall be like the stream of a swift river, which, instead of deepening its bed, destroys the banks that protect its course, until its waters are dissipated upon a broad plain, and become stagnated under that sun which once shone with golden beauty upon their rippling waves. There was a time when such a fear might have been entertained, and more than once the very existence of our kingdom has been threatened.

Nations that are chiefly warlike stake their fortunes upon the success of arms, and rise or fall with the vicissitudes of battle; but England, by her indomitable spirit of enterprise, has been the first nation to strike her roots of commerce in a perfect network over the whole face of the globe. The decline of England's greatness would involve the disruption of all the States of Europe, the impoverishment of many of them, and spread like a lasting palsy through the civilized world.

As in every separate State a sovereign power is necessary to perfect the organization of that State, and hold its parts together, so

among the many kingdoms of the earth, a supreme sovereignty is necessary for the better security of the rights of established dominions. We have seen, in late years, how a trespasser against the laws of nations was brought to account; and we know that, although the administration of justice to so great an offender was a thing of mighty cost and sacrifice, punishment was inflicted. It will be a happy era for mankind when, in the great affairs of kingdoms, as in the minor concerns of men, the Ordeal by Battle shall be done away with, and differences settled by appeal to laws founded upon reason, and administered by a pure jurisprudence. Then the sceptre of authority will be held still more firmly by the nation which is first in morals, greatest in influence, and most liberal in its own constitution. Until that time comes, and while the sword must still be made a terror to those who persist in disguising Brigandage under the name of Sovereignty, it may be a blessing for all nations that the one among them which is most free, enlightened, and humane, shall also be the most powerful.

There were times when man, having but meagre knowledge, and rare opportunities of acquiring it, the onward march of improvement was made by timid and irregular steps; that which was gained in one generation was frequently willingly relinquished by another. The mind of man was so weak, that it dared not grapple with things unknown; but the time has come, thanks to those heaven-born spirits who led the way to the assault of Ignorance, when men have not only shaken off their chains, but made useful tools of the fetters that bound them. The whole people is now at school: millions of papers and tens of thousands of books are their daily teachers. IF MEN COULD GROPE THEIR WAY FROM THE DARKNESS OF THE PAST, AND ACCOMPLISH SO MUCH GOOD, IN SPITE OF VAST IMPEDIMENTS, WHAT ARE THEY LIKELY TO DO, NOW THEY HAVE KINDLED THE LAMP OF KNOWLEDGE, AND CAN SEE THEIR WAY INTO THE BROAD AVENUES OF THE FUTURE?







H S Melville

FLOCK OF LLAMAS, IMPORTED FROM PERU, 1833.

## Book III.

# PROGRESS OF THE ARTS, SCIENCES, INDUSTRIAL PURSUITS, AND THE POLITICAL, RELIGIOUS, AND SOCIAL INSTITUTIONS OF THE BRITISH NATION.

### I. THE PROGRESS OF AGRICULTURE.



**P**LINY has recorded the story of an industrious and ingenious husbandman, who, being in advance of the knowledge of his time, cultivated a small piece of ground upon an improved method, by which he gathered much more fruits, and reaped larger profits, than the neighbours about him, though their possessions were more ample. His uncommon success excited their envy, insomuch that they brought this accusation against him—"That by sorcery, charms, and witchcraft he had transported his neighbours

fruits, fertility, and increase to his own fields." For this he was

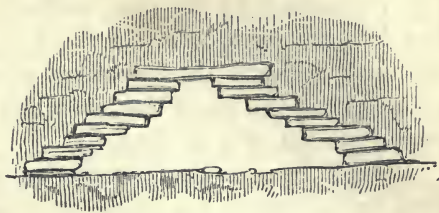


ordered peremptorily, by Albinus, a Roman general skilled in agriculture, to answer the charge before him. Cresinus, fearing the issue, resolved upon his best defence, brought his plough and other rural implements, and displaying them openly, he set there also his daughter, a lusty, strong lass, big of bone; then, turning to the citizens—"My masters," quoth he, "these are the sorceries, charms, and all the enchantments that I use: I might also allege my own travel and labour, my early rising and late sitting up, and the painful sweat that I daily endure; but I am not able to present these to your view, nor to bring them with me into this assembly." This bold and open defence captivated the people; it proved the *coup de main* which turned a doubtful result to his entire favour; he was pronounced "not guilty," and those present took note of his inventions.

This story, though not strictly belonging to the history of our own island, is derived from those who are said to have first taught to the Britons the arts of husbandry. It may, therefore, be fairly employed to show that the first improvers of agriculture had their days of trial; that in all ages and countries, and in every path of inquiry and invention—in the discovery of the rotation of crops, as in that of the rotatory motion of the earth—a Galileo has had to answer for his daring before some embodiment of ignorance constituting an Inquisition.

It has been already shown that the ancient inhabitants of this island were divided into a number of warlike tribes, and that they were constantly engaged in hostilities between themselves or with their invaders. Such a state of existence at once precludes all idea of the cultivation of the soil. Still, there are some evidences that corn was grown and husbanded as a material article of subsistence, by those people who occupied the southern extremities of the island. Cæsar described the inhabitants of the interior as being the most barbarous, and especially mentions that *they grew no corn*, thereby admitting the inference that the more advanced people were not only acquainted with the uses of corn, but that they raised it by a method of cultivation, however rude. He also speaks of having employed foraging parties to scour the country, and bring in what corn they could. The foragers found that the natives had gathered in their harvest, except in one field; and while they were cutting down the corn which stood there, the Britons made a resolute attack upon them. At a subsequent time, Cæsar compelled the Britons to send corn into his camp.

Another authority\* mentions their having subterranean places in which they stored corn in the ear, beating out, day by day, as much as they required for use. The corn which they grew was a description of barley, wheat being then unknown. Ears of barley



UNDERGROUND GRANARY.

are figured upon several of the British coins. (See p. 40.)

That they kept flocks and herds has been testified by Strabo, who speaks of their having abundance of milk, though they were unacquainted with the manufacture of cheese. Cæsar described the island as abounding with cattle, and the people of the interior as living upon milk and flesh. Even in the northern parts, where the people depended most upon hunting, they were not altogether destitute of flocks and herds; but these consisted of wild cattle, driven into enclosures to be fed upon pasturage until they were required for food. The Britons were forbidden by their religion to eat the flesh of either hares, geese, or fowls, though the former were plentiful in a wild state, and the latter were bred for pleasure.

The animals which abounded in Britain were the ox (generally white, with reddish ears), horses of a small but powerful breed, dogs of a large kind, said to have been sometimes used in war (see Plate, p. 33); others resembling the greyhound, employed in the chase; hogs, wolves,† foxes, and hares, fen-eagles, bustards, cranes, herons, and a variety of water-fowl.

During the Roman occupation, the tribes which were subdued began to think of works of industry, and to draw instruction from their conquerors. Hence we find, in the successive Roman historians, indications of the growth of agriculture in Britain. Pliny speaks of the inhabitants of Gaul and Britain having found out another kind

\* Diodorus Siculus.

† It is remarkable that the early historians make little mention of wolves in Britain, though it is evident that they must have been very numerous, and a great terror to the inhabitants. Three hundred heads of wolves were demanded by King Edgar as a yearly tribute from Wales; and in the reign of Edward I. a mandate was issued for the destruction of them in the various counties. The last presentment for destroying wolves was made in Ireland, county Cork, so late as the year 1710.

of manure for their grounds, which was a fat clay or earth. They were represented, by the same authority, as digging a hundred feet deep into the earth to obtain the best kind of marl—a fact which sufficiently indicates the importance attached to its use. They also probably knew the use of lime, since it is recorded that they exported large quantities of it to Gaul.

It would be exceedingly interesting to learn what descriptions of trees, shrubs, grasses, and edible leaves and roots were known to our British ancestors. The subject is, unfortunately, surrounded with difficulty. It may, however, be confidently asserted, that, although the vegetation of this island was exceedingly vigorous, the orders of plants indigenous to it were few. The principal trees and shrubs were the oak, mistletoe, ivy, birch, alder, pine, mountain-ash, juniper, sweet-gale, dog-rose, osiers, heaths, and a few others. The fir, chestnut, beech, elm, poplar, mulberry, lime, cypress, cedar, laurel, box, laurustinus, laburnum, and weeping-willow were unknown. Of fruit-bearing trees and shrubs, if any were then upon the island, they were only the gooseberry, currant, raspberry, alderberry, crab-apple, strawberry, and a few roseworts or bramble-berries; and these in so wild a state as to be unproductive of any material contribution to the food of man. The woods which crowned our island must therefore have been vast assemblages of oaks, stately in the maturity of ages, their spreading branches darkened by clustering mistletoe and ivy; while underneath, seeking the neighbourhood of streams, the alder put forth its dark-green leaves, and lit the shades of the forest with its star-like flowers. In the undergrowth, brambles wove an impenetrable network amid tufts of rank grass, heath, ferns, and mosses. The forest foliage of the country was varied only by a few pines, standing in solitude upon the hills, and becoming more numerous towards their native *habitat*, Scotland; while heath and juniper, in wild luxuriance, over-ran the downs.

With regard to nutritious vegetables, now so liberally supplied to our daily tables, and used as fodder for beasts, it may be asserted that none of them were made available, at least for human food. Cabbages existed only as wild colewort, growing on cliffs near the sea-coast; cauliflowers and broccoli, which are developments from the cabbage-plant, were, of course, unknown. Turnips, parsnips, and carrots grew wild; but their roots were small, dry, and stringy, and their uses undiscovered. Peas, beans, and potatoes were unknown; celery



was an acrid and poisonous plant, growing by the banks of ditches and brooks in the neighbourhood of the sea. Lettuces and endive were unknown. Spinach, onions, and leeks grew wild; but, if they were noticed at all, were regarded as useless weeds. Rhubarb was unknown; asparagus was a stunted plant, growing wild by the sea-coast; and though mushrooms must have abounded on the margins of the great woods, it is doubtful whether they were ever regarded other than as the poisonous plants to which they are allied.

The streams abounded with rushes, cowbane, water-cresses, and the more common kinds of fresh-water algæ. The sea-coasts, at a time when the ocean was little navigated, and marine plants were unemployed for manure, must have been loaded with weeds, which would frequently obstruct the estuaries of rivers, and keep the surrounding land in a state of humid corruption.

The floral beauties of the island were confined to those wild-flowers which are the delight of childhood. The eyes of the "barbarians" looked upon the modest daisy, which then presented the same simple form that it does to-day. Primroses, nursed in the recesses of gnarled roots of trees, came forth in abundance in the spring; so did the blue-bell and the violet. These familiar flowers, with dog-roses, fox-gloves, traveller's-joy, flowering heaths, and water-lilies were the chief beauties of the bouquet of ancient Britain. Fuchsias, balsams, dahlias, auriculas, hyacinths, pinks, tulips, roses, and a host of other beauties that now adorn our gardens and dwellings, were then quite unknown. Even the wall-flower and the mignonnette were strangers to our land; and the honeysuckle, which is now a common habitant of the hedges, came to Britain a stranger, and stole out of the confines of a garden, to share the fortunes of our native wild-flowers. Nor was this state of British vegetation peculiar to the earliest period. It prevailed, with only slight additions and improvements, down to the sixteenth century! We shall have, however, to enter more fully upon these matters when treating of the Progress of Horticulture;\* and therefore we at once pass on to facts more legitimately belonging to our present subject.

\* Horticulture is that branch of rural economy which is concerned with the formation and culture of gardens. Compared with Agriculture, it is the cultivation of a limited spot by manual labour, and greater complexity of operations, either for culinary vegetables, fruits, flowers, ornament, or recreation.—*Encyclo. Metropolitana.*

Early in the sixteenth century books upon husbandry began to appear; and, from such of them as have been preserved, we gather the first reliable information upon the state of agriculture at that time. A few works had been issued at prior dates, but they were either translations from the French and German, and related to continental modes of cultivation, or treated only incidentally of husbandry, in connection with herbal, astrological, and other matters, generally put forth as “grand secrets” and “mysteries” then first made known.

The earliest work of any importance by an English author, was “The Boke of Hvsbandry,” by Sir A. Fitzherbert, published in 1534. It contained no new views of agriculture, but merely a collection of rules and observations upon the different branches of husbandry as then pursued, founded upon the experience of the author, who had followed farming occupations for forty years. He reprobated some of the negligences of the existing system, such as the practice of leaving deep stubble to be mowed at leisure late in the winter, showing that thereby the ground became hardened, weeds gained strength, and stubble, good for manure, became wasted. He made but little mention of lime, which shows that it was not extensively used in his day; but frequently spoke of marl, and gave directions to farmers how to make their own implements (which was then the common practice) in intervals of comparative leisure, that they might be ready for the time of need. This volume contains many good industrial and frugal maxims, and is remarkably free from the superstitious views of planetary influences which are frequently found mentioned in works of much later date. Although books could have exercised but little influence at a time when few persons, especially of the rural classes, could read; yet Fitzherbert’s work appears to have excited attention, a second edition being “newely prynted” in the year 1548. He also published a work upon Surveying, in the year 1539, and the substance of his “Boke of Hvsbandry” was adopted by various authors, and again published in different forms at later dates.

An interesting sketch of the farm and family of a British yeoman of the sixteenth century, is afforded by the following passage from one of Hugh Latimer’s discourses, preached before Edward VI. It also indicates the value of land at the period:—

“My father was a yeoman, and had landes of his owne; onlye he had a farme of three or four pound by yeare at the uttermost; and hereupon he tilled so

much as kepte halfe a dozen men. He had walke for a hundred sheps, and my mother mylked thirty kyne. He was able, and did find the king a harnesse, with hymselfe and hys horse, whyle he came to the place that he should receive the kynges wages. I can remembre that I buckled his harness, when he went into Blak heeath felde. He kept me to schole, or elles I had not been able to have preached before the kynges majestie now. He marryed my sisters with five pounde, or twenty nobles a pece; so that he brought them up in godlines, and fear of God. He kept hospitalitie for his pore neighbours, and sum almes he gave to the pore, and all things did he of the same farme."

In 1562 Martin Tusser published his "Five Hundred Points of Husbandry." This book appears to have embodied all the olden maxims, and to have given a proverbial form to information upon rural matters. It is written in irregular verses and stanzas; and to a subsequent edition (1604) were appended "The Pointes of Huswiferie, united to the Comforts of Husbandry." It was printed in black letter, thus:—

"Otes, rie, or else barlie, and wheate that is gray,  
brings land out of comfort, and soone to decay:  
One after another, no comfort betweene,  
is crop upon crop, as will quickly be seene.  
Still crop upon crop many farmers do take,  
and reape little profit for greedinesse sake."

In this way, with much quaintness, the rules of husbandry were given, and few things then known omitted.

Great stress was laid by the olden writers upon the effects of the moon and wind. In Goodge's "Booke of Husbandry," 1577, farmers are told that in manuring the ground, it is necessary to "looke that the wind be westerly, and the moon in the wayne." This advice is repeated in "The Perfect Husbandman," 1657, and it is therein remarked that "this observation (of the moon and wind) helpeth greatly to the bettering of the ground." From the same work we learn that, although there was a general agreement upon the influence of the moon upon vegetation, there were differences of opinion as to the most favourable periods for securing that influence:—

"In sowing some think you must have regard to the moone, and to sow and set in the increase, and not in the wane. Some againe thinke it best from that she is four dayes old, till she be eighteen; some after the third, others from the tenth till the twentieth: and best (as they all suppose) the moone being aloft and not set."



The same book observes, with regard to the planting of trees, that "if the tree be planted in the increase of the moon, it groweth to be very great; but if in the wane it will be smaller, yet a great deal more lasting."

In the year 1594, Sir Hugh Platt contributed some works to the literature of husbandry. Sir Hugh is described as having been "the most ingenious husbandman of his age," and as having "held a correspondence with all lovers of agriculture throughout the kingdom." We, therefore, turn to his work, "The Jewell House of Art and Nature," with considerable interest. The motive of the author for thus undertaking books of instruction upon husbandry, is thus stated:—

"What eie doth not pittie to see the great weaknes and decay of our ancient and common mother the earth, which now is grown so aged and stricken in yeares, and so wounded at the hart with the ploughman's goad, that she beginneth to faint under the husbandman's hand, and groaneth for the decay of her natural balsam. For whose good health and recovery, and for the better comfort of sundry simple and needy farmers of this land, I have partly undertaken these strange labours, altogether abhorring from my profession, that they might both know and practise some farther secrets in their husbandry, for the better manuring of their leane and barren groundes with some new sorts of marle not yet knowne, or not sufficiently regarded by the best experienced men of our daies."

From his work, entitled "Diverse New Sorts of Soyle not yet brought into any Public Use for Manuring both of Pasture and Arable Ground," we gather many interesting particulars upon the deficiency of knowledge respecting materials available for, and the properties of, manures. In fact, seeing that the manures recommended in this work include salt, street dirt, and sullage of streets, clay, fuller's earth, moorish earth, hair, malt-dust, the offal of slaughter-houses, burnt vegetable matter, soap-boilers' ashes, fish, some new kinds of marl, and other things, and that these are said to have been "not yet brought into any public use," we cannot wonder that the land began "to faint under the husbandman's hand." The same work affords a curious instance of the want of knowledge upon the laws of vegetation. The one idea seemed to be, that there existed a universal, generative, and fructifying salt, to which all soils and earths owed their fertility. For the advancement of this theory, which was the crude "agricultural

chemistry" of its time, Sir Hugh Platt introduced into his work upon soils what he termed the "philosophical treatises" of M. Bernard Pallisy, and Franciscus Valetius, upon the properties of this *universal salt*. In those days every experiment in science had first to undergo the test of accordance with Scripture, and we find that the discoverers of the universal salt theory sought to harmonize their views with the sacred text. But as in Scripture salt is figuratively spoken of as both a blessing and a curse, it occasioned much trouble to the philosophical essayists to reconcile the conflicting passages, and to harmonize their theory with both. However, this accomplished, they proceeded to show the vegetative virtues of salt, declaring that it not only promoted generation in plants, but procreation in animals:—"Plutarch doth witnesse, that ships upon the sea are pestred and poisoned oftentimes, with exceeding store of mice. And some hold opinion, that the females, without any copulation with the males, doe conceive onely by licking of salt. And this maketh the fishmongers' wives so wanton, and so beautifull!" After many illustrations tending to show that common salt was the salt meant, the farmer was told that the philosophers "speak not of common salt," but of a mysterious "vegetative salt." This assumed philosophy was stated with confidence, and its expression maintained with obvious conceit:—

"The secret virtues which lie hid in salt confirm the same. For salt whiteneth all things, it hardeneth all things, it preserveth all things, it giveth favour to all things, it is that masticke which gleweth all things together, it gathereth and knitteth all minerall matters, and of manie thousand peeces it maketh one masse. This salt giveth sounde to all things, and without the sounde no metall will wring in his shirle voyce. Salt maketh men merrie, it whiteneth the flesh, and it giveth beautie to all reasonable creatures, it entertayneth that love and amitie which is betwixt the male and female, through the great vigour and stirring uppe which it provoketh in the engendering members; it helpeth to procreation, it giveth unto creatures their voyce, as also unto metalles.  
\* \* \* \* \* And it is salt that maketh all seedes to flourish and growe, and although the number of men is verie small, which can give any true reason whie dungue shoulde doe anie good in arable groundes, but are ledde thereto more by custome than anie philosophicall reason, nevertheless it is apparaunt that no dungue, which is layde uppon barraine groundes, could anie way enrich the same, if it were not for the salt which the straw and hay left behinde them by their putrifaction."

Sir Hugh Platt expresses his astonishment that so good a philosophy as this should have remained for a long period unnoticed.

And, wishing to console his readers as to the great store of this “vegetative salt,” which might be employed for “the enriching of so many thousand acres of barren ground as this realm of England doth now present unto us,” he remarked:—

“I must here acknowledge that the best naturall philosophie that I ever coulde learn in this point, was neither out of Aristotle’s Physicks, nor Velcurie’s Naturall Philosophy, nor gaseous meteors, nor out of any of the olde philosophicall fathers, that writ so many hundred years past; but that little which I have, I gathered it on the backside of Moore fieldes, where, by sundrie undoubted argument, I did heare it maintained, that all the elementes doo onely differ in attenuation and condensation: so as earth beeing attenuated becommeth water; and water condensate, becommeth earth; water attenuated becommeth aier, and aier condensate becommeth water; and so likewise aier attenuated becommeth fire, and fire condensate becommeth aier; and thus all of them spring from one roote, which being admitted is a manifeste prooffe that there is a greate and neere affinity betweene the lande and the sea, wherein we shall finde salte water enough for our purpose.”

Sir Hugh further enforced the arguments for the fertilizing properties of salt by the following narrative, founded upon a very probable event:—

“A sillie swaine, passing over an arm of the sea with his seede corne in a sacke, by mischance at the landing, his sacke fell into the water, and so his corne being lefte there till the next low water, became somewhat brackish, yet such was the necessity of the man, as that he (notwithstanding hee was out of all hope to have any good successe thereby, yet not being able to buie any other) bestowed the same wheat upon his plowed groundes, by the advice of a gentleman of good worship from whence I received the report thereof, and in June when the harvest time came about, he reaped a rich crop of goodly wheat such as in that yeare not any of his neighbours had the like, and yet notwithstanding (for aught that ever I could yet learne) neither he nor any other of his countrimen would ever adventure to make any further use thereof, belike being perswaded, unless that the corne *by chance* fell into the sea, it would never fructifie.”

Gabriel Plattes, an earnest and original promoter of husbandry, became prominent in the reign of Elizabeth. He commenced the publication of his observations in the year 1594, and continued to pursue the improvement of husbandry through the troubled times of James and Charles, and also during three or four years of the Commonwealth. At that time we find that farmers were little raised above the common labourers, except that they were freemen. Wives and children were subjected to heavy toil. A yeoman having a small piece of land of his own, was a very independent man; but his mode of



living was little superior to that of his own labourers. He lived on the produce of his land, fed his labourers at his board, and seldom had any dealings by means of money. Wool was the principal article sold. Sheep were kept on extensive commons, and at little expense; and in some places the folding of them upon the land was the only means of manuring it. In the winter, the only provender the flocks had was hay, and in severe winters great numbers of them died. Root crops and artificial grasses were unknown, and natural meadows, therefore, paid an enormous rent. For want of winter provender, cattle were killed when lean, and salted down for winter food. Very little fresh meat was eaten during the winter and spring; and the autumn was regarded as a general salting season.

Agricultural improvements had begun to excite attention at the close of the reign of Elizabeth. On the accession of James I., that monarch, passing from Scotland, on his way to London, was met at Godmanchester, by seventy teams of horses, drawing new ploughs. Addressing the people, the king told them that he was "mightily rejoiced to see so many good husbandmen in one town." But the distractions arising out of the civil wars put a check upon improvements. In an age of religious feuds, plots, assassinations, beheadings, and civil wars, Gabriel Plattes ventured to remind the people that "wealth gotten by vanitie shall be diminished, but he that gathereth it by labour shall prosper." And in pointing out the evils arising out of religious hatred, and its hindrance to the general good, he was bold enough to say that which, at such a time, it required much courage to utter:—

"Doth not a strong conceited Papist, and a strong conceited Protestant, think one another to be mad, and deluded by their fancies? And doth not a Jew think the same by them both? And doth not a Turke thinke the like by all three? And doth not a learned Pagan thinke the like by all the reste? \* \* \* I could wish that Christians should not be so violent in mainteining bloudshed, as they are, but rather take another way more powerfull, and lesse prejudicial to the generall good: also I could wish that the rest would looke into their follies, and not be so ready to break the generall bond of peace, and great law of nature, for their particular fancies."

In the year 1639, just before the breaking out of the civil war, he published his "Discovery of Infinite Treasure, hidden since the World's Beginning." In this work he set forth, according to his best knowledge, the "means by which barren lands might be rendered

fertile, and that as the people increase, so by their industry food may increase." He also urged that the common way of husbandry, as at that time pursued, would "produce in length of time nothing but poverty and beggary." This author affords another instance of the curious and crude hypotheses which men used to construct when they had no scientific knowledge to guide them in their researches. He thus states his views of the principles of vegetative nutrition:—

"I find a double fatnesse in every compounded body, the one combustible, the other incombustible: the combustible fatnesse causeth vegetation by its rarifying and vapping qualitie, when it feeleth the heate of the sunne; the incombustible or fixed fatnesse causeth coagulation of the said vapours by heat of the sunne, likewise by its astringent qualitie, and of these two fatnesses are all riches and treasures engendered. \* \* \* For there is no difference of dungs, but as the incombustible astringent fatnesse doth over-match, or is over-matched by the combustible; so it is more or lesse apt for a cold, or an hot ground."

This book also gives us an insight into the period when the rotation of crops began to excite attention. The author remarks that "it is usually found in the Vale of Belvoire, where the best and purest wheat in Europe usually groweth, that if the farmers sow their wheat upon the fallowes, then it is usually blasted, by reason of the fatnesse of the ground; but if they sow it with barley first, and peason next, to abate the fertilitie, and over-much fatnesse thereof, then it is not subject to blasting."

The introduction of drill husbandry has been generally ascribed to Jethro Tull, who wrote a work upon the subject in 1731. This, however, is incorrect. Sir Hugh Platt, in the year 1600, in his "New Found Arte of Setting Corn," recommended the system of "setting" in preference to "sowing," and described a board with a number of holes therein, which might be worked by two men, directed by a gardener's line, so as to keep them straight in the course of setting. He spoke, moreover, of this rude method having been previously tried, and of various opinions prevailing respecting it. But in Gabriel Plattes' "Discovery," dating more than a hundred years previously to the days of Tull, the description of a drilling machine is most minutely given. He says:—

"It is not intended that this work of setting of corne, should be generally put in practise at the first; but in every place a little in the most convenient and apt places, that so the people may be well skilled in it, and fit to follow it more earnestly in time of dearth and scarcitie, wherein so much

corne may be saved for present releefe and necessitie, that it will be good as a general storehouse for the whole kingdome, for by this invention we doe as it were borrow of nature a multitude of quarters of corne for present maintenance of foode till the ensuing harvest."

He speaks of "the tedious manner of going to worke, by digging the ground, and setting the wheate with such a number of workmen, for want of invention that did make the loss intolerable." He then mentions two engines, which he calls "my two new inventions," by which "two men or boys may set an acre upon a day," and then describes the boards, the holes, funnels, sockets of brass, and iron points, which were to be made to "play up and down at pleasure." And that this was the first machine of the kind is evident from these words:—"Though the making of this engine be somewhat chargeable and troublesome, yet, if skilful men first break the ice, then it will be common, and the most profitable invention that ever was found out." The second invention, from the description given, must have been a kind of harrow, to follow the drill. The credit, therefore, of inventing and introducing the drilling machine is due to Gabriel Plattes, of whom it is sad to record the fate, that although his labours were productive of bread to others, he became so destitute of the common necessities of life, as to fall down in the streets of London, and die of hunger!

Gervase Markham was a writer who followed Gabriel Plattes, and from his work we gather other particulars of the state of husbandry and husbandmen at that period. In his "First Book of the English Husbandman," he described himself as "recording the most true and infallible experience of the best knowing husbands in this land," and stated that he had followed the occupation of husbandman himself for a considerable time, and preserved those rules which he found infallible by experience. As this author put himself forward as one of the advanced minds of the time, to record the knowledge of the best husbandmen, we may gather what was the state of the rural intelligence when their teachers were found to say that writing and reading were unnecessary in the husbandman. Markham thought that, "as touching the master of the family himself, learning could be *no burthen*," but "if we speake as touching some especiall servants in husbandrie, as the bayliffe, the under-farmer, or any other ordinary accountant, it is not much materiall whether they be acquainted therewith or no, *for there is more trust in an honest score chaulkt on a trencher, than in a cunning written scrowle*. And there is more benefit in simple and single numeration in



chaulke, than in double multiplication, though in never so faire an hand written!" There are some people even in the present day, it is to be feared, who have faith in the sufficiency of chalk; but what will they say of the following mode of ascertaining the probable state of the corn-market, which belongs to the same order of intelligence, and was put forth by Markham as a well-founded piece of instruction:—

"If you would know whether corne shall be cheape or deere, take twelve principall graynes of wheate out of the strengthe of the eare, upon the 1st day of Januarie, and when the harth of your chimney is most hot, sweepe it clene, then make a stranger lay one of those graynes on the harth, then mark it well, and if it leape a little, corne shall be reasonably cheape, but if it leape much, then corne shall be exceeding cheape, but if it lye still and move not, then the price of corne shall stand, and continue still for that moneth, and thus you shall use your twelve graynes the first day of every moneth one after another, that is to say, every moneth one graine, and you shall know the rising and falling of corne in every moneth, all the yeare following!"

Husbandmen were not only doctors of cattle, but they seem to have systematically physicked and bled themselves. In the directions for the preservation of health given in Mr. Markham's work, they are particularly told when they may, and when they may not, let blood. It appears, from Markham as well as from Plattes, that the rotation of crops began in some measure to be understood and extended. "It is to be noticed that the black clay of all earth is the most fruitfull, and demandeth from the husbandman the least toyle, yet bringeth forth his encrease in the greatest abundance: it will well and sufficiently bring forth three crops ere it desire rest, namely, the first of barley, the second of pease, and the third of wheate." And, further, "rather than your land should lye idle, and bring forth no profit, I conclude it best to sow these pulses, which both bring forth commodity, and also out of their own natures doe manure and inrich your ground, making it more apt and fit to receive much better seede."

It is obvious, from "The English Husbandman," that, backward as were the systems of cultivation in Markham's time, general changes had taken place. He expresses his desire to "show the industrious husbandman the perfect and true reason of the *general alteration* of our workes of husbandrie through this our realme of England;" the principal improvements in which appear to have been compounding of soils, to give body to those that were light, and

to relieve the astringency of those that were heavy, together with the introduction of various manures not hitherto generally employed.

Respecting the new method of setting corn, as recommended by Gabriel Plattes, though Markham makes no mention of Plattes by name, he evidently refers to the system of drilling, when he says that he alludes to certain methods, "not because he is carried away with any novelty or strange practice," but because he "would not have our English husbandman to be ignorant of any skill or obscure facultie which is either proper to his profession, or agreeable with the fertilitie and the nature of our climates." The new system appears for a time to have excited a great deal of attention, and it was at first thought, by some enthusiastic experimentalists, that the use of the drill would supersede the necessity for the plough:—

"Some few yeares agoe, this (as it then appeared secret) being with much admiration bruited through the kingdome, insomuch, that according to our weake accustomed dispositions (which ever loves strange things best) it was held so worthy, both for general profit and particular ease, that very few (except the discreete) but did not alone put it in practice, but did even ground strong beliefes to raise themselves great common-wealthes by the profits thereof; some not only holding insufficient arguments, in great places, of the inutilitie of the plough, but even utterly contemning the poor cart jade, as a creature of no necessitie, so that poulters and carriers were in good hope to buy horse-flesh as they bought egges, at least five for a penny; but it hath proved otherwise, and the husbandman as yet cannot loose the horses' service!"

He next describes the primitive method of drilling with a board of sixe foote square, bored full of large wimble holes, six inches from each other, then, with a stick pushed through every hole in the board, holes were to be made in the ground, and a corne of wheat dropped into each hole so made. He testified to the great saving of seed-corn, and increase of crops by the new method, but nevertheless declared, that the "intricacy, trouble, and casualties, which attended it, were such, and so insupportable, that almost no husbandman could undergoe it." For these reasons the system appears to have been generally abandoned:—

"To which wee neede no better testimony than the example of those which having out of mere covetousnesse and lucre of gaine, followed it with all greedinesse, seeing the mischiefes and inconveniences which hath incountered their works, have even desisted, and forgotten that ever there was any such practice."

Considerable attention was paid to the selection of seed-corn. Husbands, wives, children, and servants, in times of leisure, pulled out of the sheaves the finest ears, and out of the ears the largest grains, to be used as seed. If the ground upon which they designed to sow wheat was rich and fertile, then they preferred seed which had grown upon the most barren earth; and they justified this preference upon the ground that—

"The seed which prospereth upon a leane ground being put into a rich, doth out of that superfluitie of warmth, strength, and fatnesse double his increase; and the seed which commeth from the fat ground being put into leane, having all the vigour, fullnesse, and juice of fertilenesse, doth not only defend itself against the hungrinesse of the ground, but brings forth increase contrary to expectation!"

In 1651, Mr. Samuel Hartlib became a prominent advocate of improved methods of cultivation. He published "*The Reformed Husbandman; or, a Brief Treatise of the Errors, Defects, and Inconveniences of English Husbandry;*" etc. The views embodied in this work were stated by Mr. Hartlib to have been "imparted to him some years ago;" and here, again, we are probably indebted to the unfortunate Gabriel Plattes, who was an acquaintance and correspondent of Hartlib, and who bequeathed his papers to him. We are the more confirmed in this opinion, because "*The Reformed Husbandman*" proposed to make known a plan for the improvement of the cultivation of corn, provided the parties most interested in the matter came forward to assist the expenses necessary to be incurred; which plan was evidently no other than Gabriel Plattes' new method of machine drilling, which had gone out of use; for Hartlib says, referring to the scheme he intended to propose—"Though it be here called sowing, as being most generally understood under that expression, yet the true meaning is to plant or set the corn at due depth and distance; for which purpose I have also invented most apt and easie wayes or instruments, and also more ready wayes to procure and also manure a compost to an advantage much beyond anything yet known or used." Mr. Hartlib advocated the erection of a College of Husbandry, for the taking in of pupils or apprentices, and also friends of the same College or Society; but his proposition, though of an excellent nature, appears to have met with no response.

The process of steeping corn for seed appears to have excited renewed attention at this time. Cow, sheep, and pigeon's dung were the ingredients to be employed, together with common salt, boiled in



rain-water. In this solution the grain was to be soaked for various periods. The salt theory still prevailed; and it was also set forth as a discovery that the larger grains of wheat were the "more masculine," and that the earth was to the masculine seed as "a female." The steeping of the seed in salt just before sowing increased its aptitude for impregnating the feminine earth. Saltpetre was declared to be the true salt, in the absence of which common salt might be used. "In this salt water steep the seed for twenty-four hours. So shall you have a better crop than usuall, though you sowe but halfe the usuall quantity of seed, and though your ground be not so often ploughed, nor be at all dunded; nay, though it were barren itselfe. Your harvest will be ripe sooner by a moneth, and by reason of the salt-peter this corn will be fitter for store-houses; for there it will lie ten years uncorrupted." The difficulty, which we have already stated, arising out of the conflicting allusions to salt in the Scriptures was by this time disposed of by a singularly crude hypothesis, which was this:—"That the matter by which men are killed and fed is but one and the same, and differs only in the minde and hand that uses it; and that God will go beyond the Devil in his own materials of destruction, by changing the use of them into a blessing; for that is most agreeable to his power and goodnesse, to raise best out of worse by changing onely the use."

In Hartlib's "Legacie; or, An Enlarged Discourse of Husbandry," 1652, he speaks of sainfoin as a grass just introduced, and tried experimentally at Cobham Park; of trefoil, as being in cultivation to a limited extent. He also alludes to lucern, saying—"There is at Paris likewise another kind of fodder which they call la lucern, which is not inferior, but rather preferred before this Saint Foine." He also mentions a grass "which groweth nine miles from Salisbury, where-with they fat hogs, and which is twenty-four foot long, a thing almost incredible, yet commonly known to all that shire."\* In this work Hartlib again enforces the advantages of spade husbandry and *drilling*, and here he makes direct allusion to Gabriel Plattes as having been the first proposer of the plan. We gather, also, from Mr. Hartlib some particulars of the first gardening experiments, which are so intimately connected with our subject that we must not pass them by:—

"About 50 years ago, about which time *Ingenuities* first began to flourish in England, this *Art of Gardening* began to creep into England, into Sandwich and

\* "*Gramen Caninum Supinum Longissimum.*"

*Surrey, Fulham*, and other places. Some old men in *Surrey*, where it flourisheth very much at present, report, That they knew the first *Gardiners* that came into those parts to plant *Cabages*, *Colleflowers*, and to sowe Turneps, Carrets, and Parsnips, to sowe *Raitk* (or early rape), *Rape*, *Pease*, all which at that time were great rarities, we having few or none in England, but what came from *Holland* and *Flaunders*. These *Gardiners* with much ado procured a plot of good ground, and gave no lesse than 8 pound per acre; yet the *Gentleman* was not content, fearing they would spoil his ground, because they used to dig it. So ignorant were we of Gardening in those dayes.

"Many parts of *England* are as yet ignorant. Within these 20 years, a famous *Town* lesse, than 20 miles of *London*, had not so much as a messe of *Pease* but what came from *London*, where at present Gardening flourisheth much. I could instance divers other places, both in the *North* and *West* of *England*, where the name of Gardening and *Howing* is scarcely known, in which places a few *Gardiners* might have saved the lives of many poor people, who have starved these deare years.

"We have as yet divers things from beyond the Seas, which the *Gardiners* may easily raise at home, though nothing nigh so much as formerly; for in *Queen Elizabeth's* time, we had not onely our *Gardiners'* ware from *Holland*, but also *Cherries* from *Flaunders*; *Apples* from *France*; *Saffron*, *Licorish* from *Spain*; *Hopps* from the *Low Countreys*. And the *Frenchman* who writes in the *Treasure Politick* saith, that its one of the great deficiencies of *England* that *Hopps* will not grow, whereas now it is known that *Licorish*, *Saffron*, *Cherries*, *Apples*, *Peares*, *Hopps*, *Cabbages* of *England* are the best in the world. Notwithstanding we as yet want many things, as for example we want *Onnions*, very many coming to *England* from *Flaunders*, *Spain*; *Madder* for dying cometh from *Zurick-Sea* by *Zealand*; we have *Red Roses* from *France*; *Anice seeds*, *Fennel seeds*, *Cumine*, *Caraway*, *Rice*, from *Italy*, which without question would grow very well in divers moist lands in *England*; yea, *Sweet Marjorame*, *Gromwell seed*, and *Virga Aurea*, though they grow in our hedges in *England*."

Contemporary with *Hartlib* was *Walter Blith*, who published "The English Improver Improved," and another volume, entitled "The Survey of Husbandry, discovering the Methods of Improving all sorts of Land." In the introduction to the former work, addressed, "To the Right Honorable the Lord Generall Cromwell, and the Right Honorable the Lord President, and the rest of that Most Honorable Society of the Councill of State," he pointed out the various influences which, in his opinion, stood to the prejudice of good husbandry in that day:—

"The first prejudice is, that if a tenant be at never so great paines or cost for the improvement of his land, he doth thereby but occasion a greater rack rent upon himself, or else invests his land-lord into his cost and labour gratis, or at least lyes at his land-lord's mercy for requital; which occasions a neglect of all good husbandry, to his owne, the land, the land-lord, and the commonwealth's suffering.



“The second prejudice is against that great improvement by floating lands, which exposeth the improver to sute of law for turning a water-course, by millers or others, which are minded to molest the improvement.

“The third prejudice is, when all men’s lands lie intermixed in common fields or meddowes; the ingenious are disabled to the improving of them, because others will not, neither sometimes can the improvement be made upon any, unlesse upon all jointly. As also the not cutting straight such watercourses, of such brooks and gutters that are exceeding crooked, which some that would cannot, because of others interests that will not, abundance of the best land in this nation is hereby lost, and wonderful improvements hindred, the waters raised, the lands flouded, sheep rotted, and cattell spoyled, all by this neglect.

“A fourth is unlimited commons, or commoning without stint on any heath, moore, forrest, or other common. This is a great prejudice to many poore men, both cottagers and land-holders, who have not of their own to stock their commons, and so lose all, that have least need, and for whome those commons were chiefly intended. And also a great hindrance to all; for being without that, every man layes on at randome, and as many as they can get; and so overstock the same, that ordinarily they pine and starve their goods therein; and once in foure or five yeares you shall observe such a rott of sheepe, that all the oppressor hath gained by eating out his poore neighbours all the other yeares, is swept away in one, and so, little advantage redoundeth to any: so that many thousand of acres of land are as it were useless, which, were all men limited according to their proportion of land or dwellings to which the common is due, the poore that could not stock theirs might set them, and reape some benefit by them.

“A fifth prejudice is the want of law to compell all men to kill their wonts or moales; the good husbandman doth, and the slothful man neglects it, and thereby raiseth such a magazine or nursery, that they cannot be destroyed, but as fast as one destroyes them, the other nurseth a fresh supply to fill the country: the prejudice is greater than can be reported.

“The sixth prejudice is the not compelling men to plant wood where they doe cut downe, then to set againe a treble proportion or more to what they doe destroy, especially now so much of the gallant wood of the nation is exposed to sale.”

These are the prejudices stated by Mr. Blith to have hindered the improvement of husbandry. In an address to the reader he makes a sort of summary of the works published upon husbandry, and of the general state of knowledge:—

“I would direct thee a little to consider what hath been written in this kind by former gallant instruments, worthy of perpetual honour. Mr. Markham did excellently well for his time, so did Mr. Gouge in his Husbandry; Mr. Tusser rimes out his experiences to good purpose, and in all their bookes thou maist finde out many things worth thy observation. Sir Francis Bacon’s *Naturall History* is worthy high esteeme; it is full of rareties and true philosophy. Sir Hugh Platt’s *Adam’s Art Revived* is of good report; I never yet could gaine the sight of it, though Mr. Gabrell Plattes’ *Discovery of Hidden Treasure* is very ingenuous; and couldst thou but fathome his corne-setting engine, and cleare it to thine owne



and others apprehensions, it would be of excellent use without question: but for the Country Farmer translated out of French, with some two or three other bookes, I can finde but little edification or addition to our owne English experiences. What other men can finde out of them I know not, but leave to thee to discover, but for the rest, they have been a great and cleare light to our horizon: yet among some of them, one thing is worthy reprehension, which is their large observations of season, signes, and planets, forgetting God the maker of them and blesser of all things, as if seeds, herbs, and plants were to be sowed in the moone or planets, which should they be observed, they had need to produce a double profit, because not halfe of any would be sowed or planted."

He mentioned the great and frequent disappointments of experimenters, the exaggerated promises of the propounders of new secrets, and the deceptions practised by designing persons—evils which obviously would be incident to a time when knowledge had scarcely dawned, and when the means of communication and instruction were very few:—

"And there is a naughty generation of men that have brought an ill report upon ingenuity through their pretences of great abilities in engineership, and great experiences of raising and drawing water, floating land, oyling corne, advising strange compositions for seed and land, pretending great advantages of chymistry, yet have or could not bring forth the fruit of their great undertakings, some through want of means to accomplish their worke, not wisely forecasting at first what it would cost, others indigent in their principles, having seene or done something, therefore thought they could doe all things; and others through a base spirit of deceit, and may bee some for want of patience to try the issue, all of which have brought a scandall upon ingenuity."

The means of improvement pointed out by Mr. Blith presented no new principles to the mind of the agriculturist, although some new inventions for raising water, draining lands, etc., were recommended. The aids to husbandry recommended by him consisted of the watering of lands that needed it; the draining or reducing of boggy, fenny, and sea-drowned lands; the enclosure of common fields, heaths, moors, etc.; the ploughing of pasture lands that were spoiled for want thereof, and pasturing others that had been destroyed by too much ploughing; the compounding of soils adapted to particular lands; and the planting of trees upon such grounds as could not be otherwise employed. He laid particular stress upon the necessity for irrigating dry and barren lands, and draining those that were drowned or rotted by water. Although the advantages promised by these propositions had been previously recognized, and lands to some extent reclaimed; notwithstanding, too, that the great

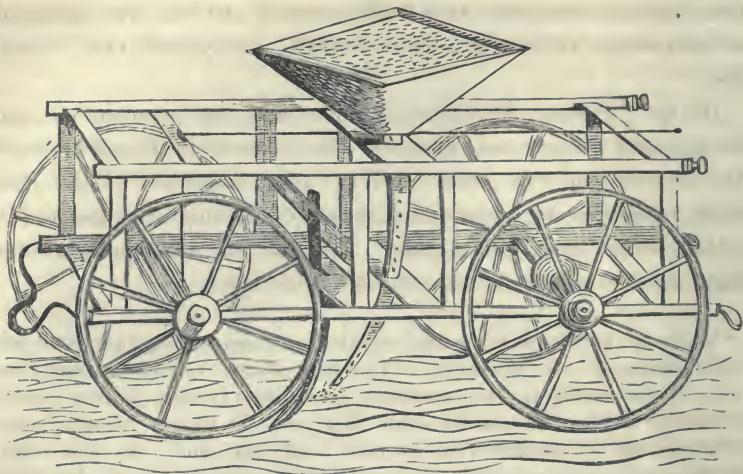
example of the recovery of land from the sea by the Romans, afforded by Romney Marsh, must have been known to the landed interests; these improvements were very tardily pursued, and the true principles and advantages of draining were never fully recognized until a recent date.

In the "Systema Agricultura," 1668, some new speculations upon the vegetative theory were offered for the instruction of agriculturists. The universal salt was stated to be of great importance in the generative operations of Nature; but it could do nothing when *uncombined* with *mercurial spirit* and *sulphur*. Nor did the latter possess vitalizing qualities unless united with the saline spirit:—

"Although the Spirit of Mercury be that active and moving part that principally appears in the Generation or Conception of any Vegetable or Animal, and is also the first that flies in the separation or dissolution of Bodies; yet it is imbecile and defective without that most Excellent, Rich, and *Sulphureous Principle*, which is of a little thicker consistence than the *Spirit*, and next unto it the most active; for when any mixture or compound is separated, the Spirits first fly, then follow after the *Sulphureous Particles*, the Temperature of everything so far as to the Heat, Consistence, and curious Texture thereof doth principally depend on *Sulphur*, from hence every Plant, Fruit, and Flower received those infinite varieties of Forms, Colours, Gusts, Odours, Signatures, and Vertues; it is that which is the proper *medium* to unite the more Volatile *Mercury* or *Spirit* to the more fixed *Salt*. This *Sulphur*, or oily part, is easily separated and distinguish'd in *Vegetables* by the more curious, it ariseth out of the earth with the aforesaid *Mercury* or *Aqueous Spirit*, though not at the first discernable, yet in every Plant more and more maturated and augmented by the Sun's influence, as the *Seed* or *Matrix* is more or less inclined to this principle. This is also that which gives to our hot and stinking Dungs, Soils, or Manures, the Oleaginous Pinquidity and Fertility, and which begets that fiery heat which is in Vegetables, Hay, Corn, etc., laid on heaps not thoroughly dry."

In this work the subject of drilling corn and other seeds was again brought under consideration. The system of hand-drilling, it stated, had been tried, and found to be too laborious and expensive; while the machine invented by Mr. Gabriel Plattes had proved too complicated for farmers to construct, or to keep in good working order when once made. To meet this difficulty, Mr. Worlidge proposed a plough-drill of simple but cumbrous parts. But this invention appears to have attracted no notice, and would obviously, from its imperfections, have failed to meet the requirements of agriculturists. It was not, therefore, until the commencement of the eighteenth century that drill-husbandry was attended with any satisfactory results.

The state of agricultural knowledge underwent no material improvement down to the closing period of the seventeenth century.



SIMPLIFIED DRILLING MACHINE, PROPOSED IN 1688.

Various books, published from 1668 to 1700, merely reproduced the crude theories already stated, and supplied empirical rules of cultivation which the husbandman must have found to be so conflicting as to have made his "confusion worse confounded." Little wonder that Lord Bacon, who had made as large a collection of agricultural works as the publications of the time could supply, ordered them to be piled up in his court-yard and burnt, saying, "In all these books I find no *principles*; they can, therefore, be of no use to any man!"

The institution of the Royal Society, and the commencement of the "Philosophical Transactions," in the year 1665, was a first grand step towards the acquirement and diffusion of knowledge, of which agriculture felt the effects, although, from certain causes incident to the time, those effects were manifested only by slow degrees. This institution was founded upon a truly liberal basis; it admitted men of every religion, profession, and country; it brought together men of title, and men whose only title lay in their zeal for the pursuit of truth; it aimed at inquiry into the soundness of every philosophical theory, and supported every investigation by experiments and observations upon the broadest scale; by an extensive correspondence with all parts of the world, it drew a great fund of useful information into one focus, to be reflected again throughout

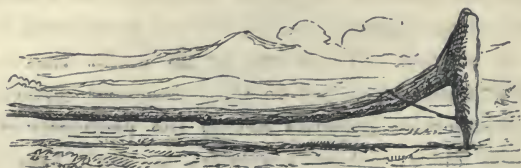


that kingdom for whose good it was immediately collected. The operations of the Royal Society embraced every walk of art, science, and industry, and some of its earliest investigations were addressed to the interests of agriculture, and the various phenomena by which its prosperity is affected. There can be no doubt that the example afforded by this institution led to the subsequent formation of those useful and honourable societies having the prosperity of agriculture as their chief object, whose operations we shall have hereafter to notice. It is worthy of mention here that this great Association, which for nearly two hundred years has so materially promoted discoveries advantageous to the human family, originated at the lodgings of Dr. Wilkins, at Oxford, where "a few gentlemen, who had begun a free way of reasoning," used to assemble together, to have the satisfaction of breathing a freer air, and of conversing in quiet one with another, without being engaged in the passions and madness of that dismal age.\*

One great cause of the slow progress of agriculture was the rudeness of the implements, which were made by husbandmen on their farms, and were remarkably cumbrous and imperfect. The deficiency of mechanical skill among husbandmen is attested in a remarkable manner by the fact, that although the great advantage of drilling was recognized as soon as introduced, it required more than a hundred years to produce a machine which enabled the improved system of setting seed crops to be advantageously pursued. But the history of the plough is even more remarkable; the most ancient and simple of machines, yet it has been almost the last to undergo improvement. The first plough is supposed to have been the rude branch of a tree, cut so as to have a cleft end, the point of which, dragged along the surface of the ground, scraped a furrow into which seeds were thrown.

\* The papers read before the Royal Society, upon the "Philosophical History of Plants," by Dr. Grew, formed a very material contribution to the knowledge of the laws of vegetation. In the Dedication to Charles II., prefixed to the papers printed subsequently by order of the Society, the author said:—"Your Majesty will here see that there are those things within a plant little less admirable than within an animal; that a plant, as well as an animal, is composed of several organical parts, some whereof may be called its bowels; that every plant hath bowels of divers kinds, containing different kinds of liquors; that every plant lives partly upon air; for the reception thereof it hath those parts which are answerable to lungs. So that a plant is, as it were, an animal in quires, as an animal is a plant, or rather several plants, bound up in one volume."

It soon occurred to the husbandman that he might relieve his own labour by yoking an animal to the long arm of this primitive instru-



ORIGINAL PLOUGH.

ment; then arose the necessity for a handle, affixed to the back, so that the plough might be guided. The strength of the animal soon wore away or broke the cleft of the branch, and this necessity gave rise to the invention of means for attaching moveable shares, first of wood, and next of stone, copper, or iron, worked to a shape adapted to the cutting of furrows, so as to avoid the excessive labour arising



SAXON PLOUGH.

from the ploughman's having to lean upon the plough with all his weight to press it into the earth. Just such an implement as these conjectures indicate was used by the Saxons. Some of the facts con-

nected with the history of the plough are almost incredible. In Ireland there once prevailed a custom of "ploughing by the horse's tail." The draught-pole was lashed to the tail of the horse, and, as no harness was employed, two men were necessary, one to guide and press upon the plough, the other to direct the horse, which he did by walking backwards before the miserable animal, and beating it on the head on either side, according to the direction required. This custom prevailed for a considerable time, in spite of a law which was passed in the early part of the seventeenth century, imposing severe penalties upon persons found guilty of "ploughing by the horse's tail," as in the Act mentioned and described. From the Rev. Cæsar Otway's "Sketches in Erris and Trawley," it appears that the barbarous practice lingered in the remote west of Ireland as late as the year 1840! And from a paper "On the Breed of Horses in Scotland in the Ancient Times," printed in the first volume of the "Transactions of the Society of Antiquaries of Scotland," we find that the same custom was practised in that country as late as the year 1792.\*

The want of proper implements not only impaired the productive-

\* The paper in the "Transactions of the Society of Antiquaries of Scotland," speaks of "the awkward custom of yoking horses by the tail, and the driver of *harrows* walking backward, with his face directly turned to the horse which he led." The Rev. C. Otway says:—"In ancient times, all through the West of Ireland, it was the practice to work *both the plough and the harrow* with horses drawing from their tails. I am assured that it is still (1840) a part of the Erris husbandry." The following is the Act of the Irish Parliament referred to, passed in the reign of Charles II., 1634:—

"*An Act against Plowing by the Tayle, and Pulling the Wool of Living Sheep.*"

"Whereas, in many places in this kingdome, there hath been a long time used a barbarous custome of ploughing, harrowing, drawing and working with horses, mares, geldings, garrans and colts, by the taile, whereby (besides the cruelty used to the beasts) the breed of horses is much impaired in this kingdome, to the great prejudice thereof: and whereas also divers have and yet do use the like barbarous custome of pulling off the wooll yearly from living sheepe instead of clipping or shearing of them; be it therefore enacted by the King's Most Excellent Majesty, and the Lords Spiritual and Temporall, and the Commons in this present Parliament assembled, that no person or persons whatsoever shall, after one yeare next ensuing the end of the present Parliament, plough, harrow, draw or worke with any horse, gelding, mare, garran or colt by the taile, nor shall cause, procure, or suffer any other to plough up or harrow his ground, or to draw any other carriages with his horses, mares, geldings, garrans or colts, or any of them by the taile: And that no person or persons whatsoever shall, after the end of this present Parliament, pull the wool off any living sheep, or cause or procure to be pulled instead of shearing or clipping of them; and if any shall do contrarie to this act and the intention thereof,



ness of the soil, but rendered the gathering of its produce a matter of considerable labour and uncertainty; while, for the want of proper tools to work with, valuable tracts of land were allowed to lie waste which are now blooming with fertility.

In the present day, only a faint conception can be formed of the extent to which the agricultural produce of our island was once affected by the humidity of the soil, and the injuries to land constantly occurring from inundations and encroachments by the sea. It is obvious that an island such as ours, with numerous rivers whose influx and efflux were daily influenced by the tides, must have needed the utmost endeavour to redeem and protect a large proportion of its soil from those liabilities to floods and inundations which its position rendered it subject to.

In the reign of Henry VI., the grievances arising out of these causes were so great, that the king ordained that for ten years then next ensuing several commissions of sewers should be made. After the expiration of the ten years, it was found necessary to further extend the commissions, which was accordingly decreed in the reign of Edward IV., and again in the time of Henry VII. The laws and customs which had prevailed with regard to the embanking and ditching of Romney Marsh, inasmuch as they were the most ancient precedents, were adopted as a guide for the various commissions appointed to direct the draining and embanking of marshy grounds and water-courses in the several counties. The commissioners had the right to summon parties in default, to levy distresses for the nonfulfilment of orders, to impress as many hedgers and ditchers and other workmen as were needful for the said works, to levy charges upon the occupants of land for the improvements made, and to seize lands if these charges were not paid.

The importance of draining and embanking marshy grounds may be more keenly impressed upon the mind, if, instead of confining our illustrations to localities that are still purely rural, we mention that a considerable area of the suburbs of London, and a part of the site of the city itself, were originally fens and moors. Such was the state

that the justices of assize at the generall assizes to be holden before them, and the justices of peace at their quarter-sessions, shall have power by this Act to enquire of, heare, and determine all and every offence and offences done contrary to the present Act, and to punish the offenders which shall do contrary to the same, by fine and imprisonment, as they in their discretion shall think fit."

of Moorfields, which is thus described by Stowe:—"When the great fen which watereth the walls on the north side of the city is frozen, multitudes of people go to play upon the ice. Some, taking a little room to run, do set their feet at a good distance, and glide a great way. Others sit upon thick pieces of ice, as big as mill-stones, and being drawn by many who hold hand in hand, when the foot of one slippeth, they all tumble down together. But others more expert in sporting thereon fix bones under their heels, and taking a pike-staff, do shove themselves forward with so much force, that they glide with no less swiftness than a bird flieth." This fen stretched from London Wall, betwixt Bishopgate and the Postern, called Cripplegate, to Finsbury and Holywell. "In the year 1415, Thomas Fawconer, mayor, caused the wall to be broken towards the Moor, and built the Posterne, called Moore Gate, for ease of the citizens to walk that way upon causeys to Isledon and Hoxdon. And in the year 1512, Roger Atehley, mayor, caused divers dykes to be cast and made, to drain the waters of Moore Fields, with bridges arched over them; and the grounds about to be levelled; whereby the said field was made somewhat more commodious; but yet it stood full of noysome waters. Whereupon, in the year 1527, Sir Thomas Seymour, mayor, caused divers sluices to be made, to convey the said waters over the town ditch, into the course of Walbroke, and so into the Thames; and by these degrees was the fen or moor at length made main and hard ground, which before, being overgrown with flags, sedges, and rushes, served no use." Nor was the ground in Smithfield, FleetDitch, and Fleet Street originally much better than a marsh.

In the commencement of the reign of Edward III., there was a considerable loss of land between a place called Knellesfleete, forming parts of Kent and Sussex, and the town of Robertbrigge, in Sussex. Six hundred and fifty acres were thereby totally drowned, bridges were destroyed, and highways rendered impassable. The king thereupon granted a commission to inquire into the causes of the said inundation, and the commission gave license to one Geoffrey de Knelle, and another, Isabell Archer, the owners of the land which had become submerged, to raise embankments, and make sluices and gutters to prevent the encroachment of the waters. No sooner were these works completed, and the drowned lands reclaimed, than a petition was presented to the king, on behalf of one James Echingham, setting forth that the alterations made by Geoffrey de Knelle and Isabell Archer had thwarted



a stream, to the damage of the said king as well as of him the said petitioner, forasmuch as thereby such ships and boats which had used to pass with victuals and other things, from divers places into those counties of Kent and Sussex, unto his manor of Echingham, through this channel, were then hindered, as also the destruction of his said market-town of Saleshurst, situate upon the said river, and of his market there, which by the course of that water had been supported; and out of which the said James and his ancestors had used to receive toll, and many commodities; the king, therefore, taking the same into consideration, and that the said James Echingham was no party to the previous inquisition, nor called at the taking thereof, did revoke the letters-patent, and commanded that the said embankments should be demolished; and desired it to be ascertained whether the said lands might be preserved by the repair of the old banks on the verge of the stream.

This is one of the many thousands of cases of litigation and dispute which arose before the water-courses, banks, and drains of the country became somewhat settled. In many cases the disputes led to absolute riots, to the destruction of the works of improvement by lawless people in the night-time, and by open defiance of the authority of the crown, the lawyers frequently reaping a rich harvest by fostering these contentions, and selling themselves to the highest bidder for the success of the cause.

The pretexts upon which these improvements were opposed, were, severally, that the expulsion of water from the manor of one owner drove it on to the manor of another; or that the alteration of a water-course destroyed a neighbouring stream in which another landowner claimed a right, and which was probably used for the working of mills, or the passage of boats; or that the draining of tracts of country destroyed fisheries or fowling places which were profitable to the maintenance of the poor.

The history of the county of Lincolnshire, especially with reference to the Isle of Axholme, affords one of the most striking instances of the importance of draining and embanking, where rivers and streams intersect the land. The locality of Axholme was originally a dry and woody country, as is evidenced from the great number of oak, fir, and other trees, which have been found at different times on the moor in digging ditches. It is said that as many as 2000 cart-loads have been taken away in a year. The bed of the river



Trent becoming deteriorated, by causes variously accounted for, destroyed the pre-existing drainage afforded by the minor streams of the Idel, Bicker's Dyke, Dorse, etc., and the waters gradually established themselves upon the low levels of the land, so that the central and higher parts became an island, which designation, though the surrounding lands are now reclaimed, the place still retains. So completely did this tract of land become flooded, that "not only in winter, but in summer, boats laden with plaster passed over that part called Hatfield Chase, to a place called Hollenbridge, near Hatfield Wood house, the water upon the drowned lands being about three feet deep, and the fisher's house, standing on ground thrown up and raised three or four feet above the level, often drowned."\*

No less than 60,000 acres were involved by these inundations. After a considerable lapse of time, the undertaking to drain this important tract of country was entered into, under a royal grant from Charles I. to Cornelius Vermuyden, a foreigner by birth, then a citizen of London. The said Vermuyden was, by the conditions of this grant, to drain the lands, and restore a certain proportion thereof to the enjoyment of the commoners, and should pay to the owners of lands lying within the same level, such sums of money as the said lands should be thought worth by four commissioners. The commoners, seeing that the submerged lands were of no use to them, readily acceded to the award, which gave them 6000 acres out of 13,400 that were then to be drained. In the space of five years, the water, which formerly overflowed the whole level, was conveyed into the river Trent by sewers and sluices, which let out the drained water at every ebb, and kept the tides back at each flow. The land immediately became valuable, producing excellent crops of corn—seeing which, the commoners became dissatisfied with the award to which they had previously acceded, gave vent to feelings of the blindest hatred towards the "foreigners" who had stolen their lands, and broke out into open riot. It was a remarkable sight, after a lost district had been reclaimed from a waste of waters, and fields made to smile again with waving corn, to see a lawless mob, armed with pickaxes and muskets, pulling up the flood-gates of the sewers, and letting the destroying tides in upon the land. Yet they persisted in

\* Dugdale's "History of Imbanking and Draining."

their blind folly, and declared that they would drown the whole level, and force the foreigners to swim away like ducks. And this they did for weeks together, until barns were flooded, corn-stacks washed away, and the outstanding crops of nearly 74,000 acres destroyed!

In De Foe's "Tour through Britain," 1714, he gives the following account of the county of Essex:—"One thing deserves mention here; which is, that all along this county it is very frequent to meet with men that have had from five or six, to fourteen or fifteen wives; and I was informed, that in the marshes, over against Candy Island, was a farmer, who was then living with the five-and-twentieth; and that his son, who was but thirty-five years old, had already had about fourteen. Indeed, this part of the story I only had by report, tho' from good hands: but the other is well known, and will be attested, about Fobbing, Curringham, Thundersly, Benfleet, Prittlewell, Wakering, Great Stanbridge, Cricksea, Burnham, Dengy, and other towns of the like situation: the reason, as a merry fellow told me, who said he had had about a dozen, was this, That they being bred in the marshes themselves, and seasoned to the place, did pretty well; but that they generally chose to leave their own lasses to their neighbours out of the marshes, and went to the uplands for a wife: That when they took the young women out of the wholesome fresh air, they were clear and healthy; but when they came into the marshes among the fogs and damps, they presently changed complexion, got an ague or two, and seldom held it above half-a-year, or a year at most; and then, said he, we go to the uplands again, and fetch another. Nor do the men in these parts hold it out, as in other counties, for we seldom meet with very ancient people among the poor; insomuch, that hardly one half of the inhabitants are natives of the place."

The general aspect of the country was vastly different from that which it now presents, even in the rudest localities. The subject of roads and wheeled carriages has been deemed sufficiently interesting to form a distinct section of this History.\* We will, therefore, only briefly allude to the subject here. In many instances manures had to be conveyed to lands in bags upon horses' backs, a process which rendered the operation slow and expensive. Scarcely a hedge-row was to be seen; and the want of protection by enclosures retarded the improvement of the whole face of the country.

\* The Progress of Roads, Wheeled Carriages, and Inland Water Conveyances.



Upright stones, as in a much more ancient period, defined the limits of manorial rights, but afforded no protection to crops from predatory cattle, or disorderly and mischievous vagrants. Arable and pasture land amounted to little more than one-half the area of the kingdom. From Oxfordshire to Worcestershire, the road passed through a country more than half of which was unenclosed;



BOUNDARY STONE.

from London to Chichester there was scarcely a single enclosure; from Gloucester to Abingdon the same. The roads of many of the counties were in an almost impassable condition. Main roads were frequently repaired by throwing into the ruts stones as large as they were when broken from the quarry, and cross roads were positively dangerous. In Essex, as late as 1767, Arthur Young found the lanes so narrow that not a mouse could pass a carriage, and ruts of an incredible depth; chalk waggons stuck fast till a line of them were in the same predicament, and it required twenty or thirty horses to be lashed together to each to draw them out one by one. The thoroughfares, in fact, were ditches of thick mud cut up by secondary ditches of irregular depth. In attempting to traverse them, Young had sometimes to alight from his chaise, and get the rustics to assist him in lifting it over the hedge. "I remember," says he, "the roads of Oxfordshire forty years ago, when they were in a condition formidable



to the bones of all who travelled upon wheels." And he speaks of the wastes which at that period were scattered over the whole kingdom, many of them in the richest counties, under the name of commons, greens, forests, chases, moors, bogs, and marshes, as a national disgrace. The Rev. Arthur Young described the wastes of Sussex as amounting in 1793 to the proportion of 90,000 acres out of 470,360 acres, "all of which, by a judicious management in the cultivation, might not only be converted to the amazing benefit of the county of which they are a part, but be highly productive to the empire at large." Notwithstanding the bad state of the roads, the introduction of turnpikes was generally opposed, farmers being quite accustomed to severe joltings and an occasional upset, and having no idea of the great advantages that would result from better means of communication.

The extracts which have been given from writers of the olden time exhibit the state of knowledge—the highest degree of agricultural intelligence—down to the close of the seventeenth century. As the agricultural experimentalists and writers of the present day are the representative men of their age, and will transmit to future generations the highest attainments of the cultivators of the soil in the nineteenth century, so do the opinions and experiences of Fitzherbert, Tusser, Goodge, Platt, Plattes, Markham, Hartlib, Blith, and others, as recorded in their works, reveal to us the theory and practice of agriculture from the commencement of the sixteenth to the end of the seventeenth centuries. We must not forget, however, that the authors mentioned were the leading men of their time, and that, among husbandmen generally, a much lower order of intelligence prevailed. Hence we find in works upon witchcraft, and various superstitions, that farmers and rustic labourers were the chief objects of the supposed sorceries; and that extraordinary stories have descended in books, as well as by traditions, of crops being reaped by the Devil, and carried away in the night; of cattle being bewitched and dying, or, when diseased, being cured by a "charm" worked by a magician or a sorceress. Even in printed works we find it gravely stated that a cow must be put to the bull in the increase of the moon; that to cure a cow of an internal disorder called "crowing," she must be "suddenly brought to see anything swimming, especially (as some will have it) a drake on the water, when she shall be presently cured." And further, that an excellent remedy for the lungs of a beast infected is to pierce one of his ears with a little bodkin, and put into the holes

the burnt roots of hazel-trees," etc.; and that the physic-box of the husbandman should contain the "blood of a sea tortoise," and the "powdered liver of a wolf," as things essential to the cure and health of live stock!\*

Before we pass on to the consideration of the great improvements which distinguish the last hundred and fifty years, let us glance at the leading historical events, by which the Progress of Agriculture has been affected.† The most important of these are the Conquest and the intestine struggles which followed that event, the Wars of the Roses, and the Civil Wars in the time of Charles I.

The Norman Conquest brought with it an entire humiliation of the English people. Under the system of feudalism which then became established, small landholders were constantly liable to be swept away by the quarrels of rival chiefs, and vassals to be suddenly withdrawn from labour in the fields to duties under arms. If, from lands that were unshackled by the law, a thrifty husbandman took a piece, and proceeded to cultivate it, he thereby invited the notice of some baron greedy of possession, to whom he was compelled by the awe of force to yield it up, and be content to occupy it as a fief, upon the best conditions that could be obtained. The struggles which the people made to resist the Norman dominion were so severe, that the whole face of the country for a time appeared a scene of wretchedness. "From York to Durham not an inhabited village remained. Fire, slaughter, and desolation made it a vast wilderness."‡ Not content with those large forests which former kings possessed, the Conqueror resolved to make a new forest near his residence at Winchester, and for that purpose he laid waste the country to an extent of thirty miles, expelled the inhabitants from their houses,

\* The following "Good Cure for a Beast that Hath a Strain in the Bladder," is transcribed *verbatim* from "The Countryman's Treasure," by James Lambert, London, 1676:—"Take a Swallow's nest, the Birds and all, if you can get them, and put them all into a Mortar, and pound the Birds, Nest, and Feathers all together, and then boyl them in fair Water, and put in a good handful of Plantane leaves and seeds, Blewbottle, and the roots of Daffidillies, also put in a little Sumack, and boyl them very well; then strain them and put to a little sweet Wine and give it the Beast Milkwarm fasting. But first let blood in the Neck-vein for to draw the Blood back, and within half an hour give them the drink, and it will stay certainly."

† The laws affecting the Prosperity of Agriculture will be considered in the Section upon the Progress of Legislation.

‡ William of Malmesbury.

seized their property, and made the sufferers no compensation for the injury.\* With such an example set by the king, every baron enjoying the royal favour emulated his example, and each estate throughout the kingdom became the centre of a petty and distracting tyranny.† Such were the effects of the Conquest, that four great famines occurred within a few years subsequent thereto, which were attributable to devastations. The following description of the state of the country in 1147 is emphatically descriptive:—"All England wore a face of misery and desolation. Multitudes abandoned their beloved country, and went into voluntary exile; others, forsaking their own houses, built wretched hovels in the church-yards, hoping for protection from the sacredness of the place. Whole families, after sustaining life as long as they could by eating herbs, roots, and the flesh of dogs and horses, at last died of hunger; and you might see many pleasant villages without a single inhabitant."‡

In the broken intervals of peace, however, agriculture advanced in isolated spots, from causes incidental to the Norman occupation. Thousands of husbandmen, from the fertile plains of Flanders and Normandy, hoping to find favour with their wealthier countrymen, settled in this island, and introduced the better systems of cultivation which they had previously pursued in their own lands. The clergy, and especially the monks, being undisturbed in their possessions, on account of their sacred avocations, took advantage of their security, and devoted attention to the cultivation of the soil. A canon of council, dated 1179, affords an evidence of the interest which the clerical orders took in the affairs of agriculture. It is thereby decreed that all "presbyters, clerks, monks, converts, pilgrims, and peasants, when they are engaged in the labours of husbandry, shall, together with the cattle in their ploughs, and the seed which they carry in the

\* Wade's "British History."

† The conduct of Richard de Bulos, Lord of Brunne and Deeping, who was chamberlain to the Conqueror, deserves mention, as an exception to the character of the Norman barons. He took a great delight in agriculture, and studied the breeding of horses and cattle. He enclosed and drained a great extent of country, embanked the river Wieland, which frequently overflowed the fields, built houses and cottages upon the bank, and formed a settlement, which increased so much that in time it formed the town of *Deeping*, so called from its low situation. Here he planted orchards, cultivated commons, and converted lakes and quagmires into fertile fields and meadows. "Hist. Ingulphi," Oxon, 1684.

‡ "Gesta Regis Stephani."



field, enjoy perfect security; and that all who molest or interrupt them, if they do not desist when they have been admonished, shall be excommunicated.”\* This canon affords an insight into the great discouragements of agriculture which had previously existed. Evidently people engaged therein had been liable to frequent molestations, and to have their cattle, ploughs, and even the seeds which they were sowing, carried off by lawless bands.

During the protracted Wars of the Roses, the country again suffered from devastations equal to those of the Conquest. For a period of thirty years, labourers were liable every moment to be called from the plough to the battle-field; the nobility were almost entirely swept away, and such multitudes of labourers were withdrawn from the pursuit of industry, and fell in battle, that there remained not hands sufficient to cultivate the soil. In this extremity laws were made to reduce the price of labour, to compel men to become labourers, and to prevent persons having lands from putting their sons to any other occupation but that of husbandmen. These laws proved abortive, and the scarcity of labour compelled the landholders to enclose their lands. They had discovered that flocks and herds were better adapted to such troublesome times than growing crops. The former might be removed on the irruption of an enemy, or be disposed of secretly, if the proprietor became involved in the misfortunes of his party.† The increasing consumption of wool at that period gave an additional impetus to the conversion of arable lands into pasture—a system which, while it enriched the few, greatly impoverished the many. Enclosures were multiplied; demesne lands were extended, till the farms of husbandmen were appropriated to pasture—their houses were demolished, or permitted to decay; while a few herdsmen supplanted the yeomen, and, in some instances, the shepherd and his dog were the only occupants of large tracts, save the flocks of sheep which they were there to guard.

The Civil War against Charles I. proved another disastrous era in the history of agriculture. The contending forces wandered over the country seizing household stuff, oxen, sheep, cattle, corn, and hay. They laid watch for these commodities going to or coming from markets; and they cut down corn before it was ripe, to feed their horses. The Royal party attributed these outrages to the Parliamentarians, and the latter to the Royalists. Counter proclamations were

\* “Chron. Gervas.”

† Dr. Henry’s “History of Britain.”

frequent. In one of them the King regretted "that the lanes and deep narrow wayes" of the country prevented his horse from punishing the offenders—a significant indication of the miserable means of communication. Farmers were crucified between two sets of thieves. The military discipline of the time was so loose that soldiers, regardless of their officers, formed themselves into plundering bands, and committed all sorts of depredations. Every idle vagabond looked upon robbery as the order of the day, and outlaws, having no right but to the gallows, joined the forces of either cause, to save their necks and cover their depredations. With such terrible visitations as these, which are only the more marked of history, it is no wonder that Agriculture languished, and that men were little inclined, even if they possessed the knowledge, to do much to enrich the soil. The losses sustained by unpropitious seasons were also severe and frequent. A wet summer destroyed all the farmer's hopes, and produced famine throughout the land.

This rapid historical sketch brings us down to the time of Fitzherbert, and the other pioneers of agricultural inquiry and instruction, with whose writings we are already acquainted. Hartlib was pensioned by the Protector, who bestowed favour upon attempts at agricultural improvement.

The state of agriculture in the time of the Commonwealth may be thus described:—The same crops were grown year after year, until the land, becoming exhausted, refused to recompense the cost of labour. Then a long period of naked fallow was the expedient for restoring fertility to the soil. Farm-yard dung, impoverished by a bad system of management, was almost the only manure. The practice commonly prevailed of cultivating farms upon what was termed the "in-field" and "out-field" systems,\* by which the land near the farm-offices received

\* The system of "in-field" and "out-field" here alluded to, must not be mistaken for that of the *in-lands* and *out-lands* which prevailed in the time of the Anglo-Saxons. In the division of the country by the Saxons, those of the leaders who obtained the greatest shares divided their estates into two parts, which were distinguished as *in-lands* and *out-lands*. The *in-lands* were those which lay contiguous to the mansion of their owner, which he kept in his own immediate possession, and cultivated by his slaves for the purpose of supplying provisions to his family. The *out-lands* were such as lay at a greater distance from the dwelling of the lord, and were let to the farmers at a moderate rent, which was generally paid in kind.—*Encyclo. Metropolitana.*

all the manure collected there, and those lands were kept for successive years under a corn crop, consisting occasionally of wheat, but more commonly of oats, rye, barley, or peas; and although an imperfect fallowing was introduced at the close of each succession of six or eight years, the long continuance of corn crops kept the soil in a continually impoverishing condition. The out-field land, which formed the bulk of the possession, was made to grow a series of oat crops, generally three, when, exhausted in strength and over-run with weeds, it was abandoned to rest, until the caprice of the occupier should deem it prepared to undergo a renewed attempt to produce another series of scanty crops. The only manure applied to this division of the farm was obtained by occasionally folding the few live stock then kept upon detached portions of it, after which it was expected to yield four or five corn crops in the place of three.\* Wheat was rarely grown, and more rarely eaten by the humbler classes. Rye, oats, and barley were the prevailing produce. Artificial grasses and root crops were but little known, so that the supply of provender for cattle was exceedingly precarious, and rendered it necessary to kill off a great proportion of stock on the approach of winter, keeping only those that were necessary for dairy purposes, or for labour; since, by feeding stock during winter upon hay alone, they would lose the flesh formed in summer.

The introduction of Gardening could scarcely have failed to exercise a powerful influence upon the agricultural mind, since it demonstrated that, by a higher system of cultivation, results might be obtained which were never previously contemplated. It may not be unadvisable to ask the Agriculturist to look back to the origin of some of those useful vegetables which now constitute so material a part of our nation's wealth, and contribute so largely to the people's happiness.

The parent of all the cultivated varieties of Cabbage was originally a wild plant growing on sea-cliffs. From this primitive and valueless stock have been developed not only the different healthful and economical cabbages of our gardens and farms, but also kales, savoys, cauliflowers, and broccoli in remarkable variety. Field cabbages now form one of the most valuable productions of the farm, being vastly productive, accessible at all times, affording an unfailing supply for fodder during the spring months, especially grateful to ewes in lamb, and liked equally by beasts and sheep. A single cabbage sometimes

\* "Agriculture of Scotland:" Mr. John Dudgeon's Prize Essay. "Journal of Agriculture."



weighs as much as 40 lbs. Mr. Amos, of Brothertoft, near Boston, one year planted forty-six acres, a portion of which yielded fifty tons' weight of cabbages to the acre.

The wild Parsnip, growing upon hillocks and chalky banks, with a small stringy acrimonious root, became, under the hand of the skilful cultivator, the large edible which is now supplied to our tables, and also yields to the farmer a famous feed for milch cows, pigs, and other live stock, while it prepares the ground for the reception of wheat. The produce of this valuable root amounts to as much as from nine to eleven tons per acre, supplying a description of food which stands very high in the scale of nutritives.

From the common wild Turnip, inhabiting the borders of fields, came the varieties of that very useful root, the introduction of which has exercised not only a material influence upon Agriculture, but has been held by men of sound observation to have saved the kingdom from a calamity which might have endangered its very existence—the calamity of food failing to meet the rapid growth of population. In 1597 there were two sorts of turnips in cultivation—a small and a large one. Gerard spoke of a third sort which he had heard of, but had not seen, and which he thought might have been the red beet, as those who had seen it described it to have red roots. “Small turneps,” says Gerard, “grow in fields, and divers vineyards or hop-gardens in most places of England. The small turnep groweth by a village neere London (called Hackeney) in a sandie ground, and is brought to the Crosse in Cheapside by the women of that village to be solde, and are the best that ever I tasted.” There are now so many varieties produced from cross impregnation, that some persons may feel sceptical as to the unity of their origin. However, whether they sprung from one or more species is a matter of very little moment, since the whole genus presents the same marked advances under cultivation. The relation of turnips to systems of husbandry, and the supply of food to the nation, may be easily explained. The absence of winter food rendered it impossible for farmers to keep stock proportioned to their acres; and the deficiency of stock limited the supply of manure to be applied to the improvement of the land. It was soon found that the growth of turnips in rotation with grain, not only yielded abundant and excellent keep for live stock, but gave heart to the land by perforating it with roots which rejected those properties of the soil essential to wheat, and

gave a rich dressing through the folding of stock, and feeding off the crop. Hence the field culture of turnips combined the advantages of a fallow, a crop, and a dressing at one operation. The land, penetrated and cleaned by turnips, trampled by sheep, and enriched by their manure, yielded abundant grain crops, and thus the increase of stock and the improvement of the granary, which had previously held a partial antagonism to each other, were now promoted by the same means. But the introduction of turnips did more than help our wants: it added to the comforts and health of the people, by affording a supply of fresh meat during the winter, instead of salted flesh, upon which former generations had to live a considerable portion of their time.

Again, we see the wonderful results of cultivation in the instance of the Carrot, which, in its natural state grew in scattered patches over the country, producing a root of proportions scarcely sufficient to excite observation. The enormous size of carrots in the present day, their excellent qualities, both for the table and the stall, and the abundant yield of 9000 lbs. to an acre, belong to the triumphs of cultivation.

Our last reference shall be to the Potatoe, that excellent root, which now ranks next to bread in the food of the people, but of which we knew nothing until the year 1586, and understood little until the latter part of the seventeenth century. In Gerard's time, 1597, Virginian potatoes, as they were then called, were just beginning to be known. A sweet potatoe had been previously introduced, which was used as a kind of confection at the tables of the rich. Of these, Gerard says, "They are used to be eaten rosted in the ashes; some, when they be so rosted, infuse them, and sop them in wine; and others to give them the greater grace in eating, do boil them with prunes and so eat them. And likewise others dresse them (being first rosted) with oile, vineger, and salt, every man according to his own taste and liking: notwithstanding howsoever they be dressed, they comfort, nourish, and strengthen the bodie."\* These were sold by women, who stood about the Exchange with baskets. The same writer says of the common potatoe, which for a considerable time after its introduction was a rarity, that "it was likewise a foode, as also a meete for pleasure, being either rosted in the embers, or boiled and eaten

\* "The Herball; or, General Historie of Plantes," 1597.

with oile, vinegar, or dressed anie other way by the hand of some cunning in cookerie." They were originally the size of walnuts.

From a pamphlet published in 1664, entitled, "England's Happiness Increased," it appears that the cultivation of the potatoe had not made much advance. The author recommended the king to import potatoes for seed from Ireland and Wales into England, and to appoint by royal license a number of persons as potatoe



DAUCUS CAROTA (*Wild Carrot*).

BRASSICA RAPA (*Wild Turnip*).

planters, giving to each person licensed a bushel of potatoes to commence his plantation. This suggestion was accompanied by a recommendation to the effect that His Majesty should *command* the use of potatoe meal by his subjects.\* It appears that a prejudice

\* "England's Happiness Increased; or, A Sure and Easie Remedy against all succeeding Dear Years; by a Plantation of the Roots called Potatoes, &c., &c.



existed against the potatoe, upon the ground that its use would reduce the people to the level of the savages who lived upon roots; and it was urged, by way of reply and reconciliation, that the Indians, among whom potatoes grew, were ignorant of their uses! When potatoes were first cultivated, they were only available for food during a few months of the year. There are now endless varieties of them, and the introduction of early and late kinds keeps

BRASSICA OLERACEA (*Sea Cabbage*).PASTINACA SATIVA (*Common Parsnip*).

up a plentiful supply throughout the year. The potatoe disease has operated to some extent to check this branch of cultivation, but there is every prospect that the impediment will pass away,

By which Ten Thousand Men in England and Wales, who know not how to live, or what to do to get a maintenance for their families, may of One Acre of Ground make Thirty Pounds per Annum. Invented and published for the good of the poorer sort. By John Forster, Gent. London, 1664."

and that Mr. Knight's prediction that "more than a thousand bushels of potatoes may and will be obtained from an acre of ground," will be fulfilled.

The commencement of the eighteenth century may be called the dawning of an era of *experimental* inquiry. Although another hundred years rolled away before Sir Humphry Davy imparted new light and life to the researches of the improvers of agriculture, the history of the intervening period is not devoid of interest. The old and crude theories of a "universal generative salt," of "mercurial spirit," and "fatness in earths," were unsatisfactory to minds that had tasted of the advancing intelligence of the times, though they were unprepared to substitute for what they suspected to be error, any theory more accordant with truth.

The press, which had begun to operate to the aid of every work of progress, gave a new vitality to the most ancient labour and study of mankind. The gates of another Eden were opened, and to enter those gates it was necessary that the "masters of farms" (to whom Markham had reluctantly admitted that reading and writing might be "*no burthen*") should at least be able to read the reports of important experiments that were then being made, and their results printed in books, transactions of agricultural societies, and in newspapers throughout the land. These lessons were no longer the mere speculations of theorists, nor the crude guesses of ingenious minds groping in the dark to find some tangible truth, nor the empirical rules of ambitious book-makers, founded upon the conflicting testimonies and ill-digested observations of workmen steeped in superstition and ignorance. Men said, "Let us Work, Observe, and Learn; and, as we can now communicate with each other, let us make known our observations for the general good." The first Associations of Farmers appear to have been those for mutual assistance in the apprehension and prosecution of thieves; and as they occasionally met for the promotion of these objects, they talked of their crops and flocks; and thus, the exchange of information proving both agreeable and beneficial, they determined to enlarge the objects of their Clubs. The adoption of this resolution was followed by the establishment of Societies, and the publication of papers and books. As the first water that runs into a ditch stirs up the foulness gathered there, so the effect of the first current of thought and action in the channels of agricultural improvement was to excite discordant

opinions, which had long been in a state of stagnation, frequent jealousies, and hasty conclusions. But as, one by one, discords, jealousies, and errors were borne away by the onward tide of intelligence, the current of thought became deeper and clearer, and tended to healthier results.

The earlier part of the century saw the Society of Improvers in Scotland\* holding their fortnightly meetings, forming classes to study and improve the different branches of agriculture, carrying on correspondence with neighbouring countries, and answering questions addressed by farmers to the Society upon the best modes of cultivation. Nor was this Society confined to men of high position, such as Lord Cathcart, Lord Reay, Lord Rollo, Lord Ross, the Hon. Sir James Fergusson, Sir William Bond, Sir Archibald Grant, Sir George Durham, and others, who took part in its first transactions, and paid "a crown at their entry, and thereafter yearly a crown at the anniversary meetings;" but the noblemen and gentlemen who founded the institution very laudably passed a rule, "That farmers and gardeners, who shall desire to be members, be received in *gratis*, if by the Society or council found qualified; and that how soon any experiments or machines of husbandry are agreed upon by the council as fit to be made, advertisement be given to such workmen as please, to come and enter their names in a book to be kept by the secretary." And further, "That members of the Society who want the opinion of the council concerning their farms or grounds, shall, upon sending to the secretary the exact situation and nature of them, with queries, be answered by the council without any expense, excepting postage. That it be recommended to the said persons to return the secretary a particular account of the success; and that this shall be immediately inserted in the newspapers, to certiorate all concerned." The result was just what might be expected—experiments in every direction, followed by great improvements in the agriculture of Scotland. After twenty years' operations, the practices of draining, enclosing, summer fallowing, sowing flax, hemp, rape, turnip and grass seeds, planting cabbages after, and potatoes with the plough, in fields of great extent, were introduced, and such improvements made in husbandry in general, that "more corn was grown yearly, where corn never grew before, than a sixth of all that the kingdom used to produce at any previous time."

\* Founded on the 8th of June, 1723.



In Ireland, soon after the rise of the Scottish Society, a number of gentlemen began to associate themselves for similar objects, when Mr. Prior, of Rathdowney, Queen's County, led a movement which resulted, about the year 1734, in the formation of the Dublin Society for the Promotion of Husbandry. In 1736 the Society commenced publishing a series of "Weekly Observations," the object of which was "in the plainest manner to direct the industry of common artists; and to bring practical and useful knowledge from the retirements of libraries and closets into public view." In 1749 the Society obtained a royal charter, enlarged its operations, granted premiums for improvements, and contributed materially to advance the condition and the system of agriculture.

In England the Royal Society continued its operations, and added greatly to the increase of knowledge upon vegetable physiology. In 1755 was founded the Society for the Encouragement of Arts and Manufactures, which for many years offered great encouragement to improvements in agriculture. In the list of premiums for the year 1758, among several others relating to agriculture, were the following:—"For an effectual method to prevent or destroy the turnip fly, £10." "For planting and raising the best roots of madder, £20;" with three other prizes of smaller amount. "For the best set of experiments, with a dissertation on the nature and operation of manures, a gold medal." "For the best set of experiments, with a dissertation on soils, a gold medal." "For an effectual method to prevent or cure the rot in sheep, £10." Similar premiums were offered annually; and although, after the rise of agricultural societies, the Society of Arts was regarded as less an agricultural institution than formerly, the fact should be remembered, that it was the first association in England which offered specific rewards for agricultural improvements. The first officers of the Society of Arts were Lord Viscount Folkestone, president; Lord Romney, the Rev. Dr. Stephen Hales, and Charles Whitworth and James Theobald, Esqrs., vice-presidents; John Goodchild, Esq., treasurer; and Mr. William Shipley, secretary. Minor societies sprung up everywhere; and although it has been said that "they were rather associations for the promotion of eating and drinking, than for the advancement of the arts by which the materials for eating and drinking are increased,"\* there can be little doubt that they tended to rouse the energies of a class of men of dormant habits

\* Quarterly Review, No. 206, art. "The Progress of Agriculture."

and uncultivated minds,\* and to make them ambitious to be able to introduce to their meetings instances of improvement, which might gain for them the approbation of their associates. Among those institutions, the Bath and West of England Agricultural Society, established in 1777, took a high position, which it retains to this day. Before the close of the century (1793), the English Board of Agriculture was established by Act of Parliament, promoted chiefly by the exertions of Sir John Sinclair, assisted by the intelligence of Mr. Arthur Young, to whose valuable Experiments and Surveys we must hereafter refer.

The national society, now known as the Smithfield Club, was instituted under the title of the "Smithfield Cattle and Sheep Society," December 17, 1798. Mr. J. Wilkes, of Measham, Derbyshire, the founder, and several other well-known agriculturists, assembled for its formation on that day, being the great Smithfield market-day before Christmas. The late Francis Duke of Bedford occupied the chair. There were also present Lord Somerville, John Bennet, the Earl of Winchelsea, John Westcar, Richard Astley, John Ellman, Arthur Young, and twenty-one others. Later in the day, Sir Joseph Banks and seven other members were elected.†

Here, then, had arisen in England, Scotland, and Wales great

\* In a work published in 1748, entitled, "A True Relation or Collection of the most Remarkable Dearths and Famines," the following story is told with all gravity. It affords an illustration of the kind of instruction which farmers still continued to receive:—"An. Dom. 1234, 18 Henry the 3, was a great Frost at Christmasse, which destroyed the corne in the ground, and the roots of hearbes in the gardens, continuing till Candlemasse without any snow, so that no man could plough the ground, and all the year after was unseasonable weather, so that barrenesse of all things ensued, and many poor folks dyed for want of victualls, the rich being so bewitched with avarice, that they could yield them no reliefe. Amongst whom Walter Gray, then Archbishop of York, was not least covetous, of whom it is recorded that his corne being then 5 yeares old, hee doubting the same to be spoiled with vermine, did command that it should be delivered to the husbandmen that inhabited his mannours, upon condition that they should pay him the like quantity of new corne after harvest, but would give none to the poor for God's sake, whereupon it came to passe, that when men came to a great stack of corne, which stood near the Towne of *Rippon*, there appeared in the sheaves all over the same the heads of wormes, serpents, and toads; besides, a voice was heard out of the corne-mow, saying, '*Lay no hands on the corne, for the Archbishop and all that hee hath is the Devill's.*' To conclude, the Bailiffes were forced to build a high wall round about the corne, and then to set it on fire, lest the venomous wormes should have gotten out and poisoned the corne in other places." The writer very quaintly adds, "How this Bishop died I have not read, and whether he went to God or the Devill, it is not for me to determine."

† "History of the Smithfield Club," by B. T. B. Gibbs, Esq.

institutions drawing the intelligence of those countries to their several centres, kindling desire for information, satisfying that desire by frequent intercourse, and by well written publications, and converting many important farms and estates into trial-grounds for experiments which until then had been unconnected, ill-conducted, unreported, and which, if they had not disappointed the hopes of their promoters, had at least contributed no general aid to Agricultural Progress.

We must now return to the period of the origin of the first Agricultural Society, to mention the efforts of an individual who about the same time took upon himself the great work of agricultural reformation. To Jethro Tull, whose name has already been mentioned in this history, agriculture owes far more than the results of his individual experiments and opinions, since by an energetic line of conduct he aroused attention, and provoked inquiries which might otherwise have been long deferred. In 1731 he published his "Horse-hoeing Husbandry; or, an Essay on the Principles of Vegetation and Tillage, Designed to Introduce a New Method of Culture." The services he rendered to agriculture were of two kinds: one, the introduction of an improved system of cultivation, with the aid of better implements than had previously existed; the other, the bold assertion of a theory which excited so much discussion, that it contributed to the discovery of truths to which it was diametrically opposed. "Tull was the first who boldly and zealously contended for the adoption of improved machinery in all agricultural operations; the ploughs which accompany his 'Horse-hoeing Husbandry' have not been very materially improved in the last century. He invented several varieties of hand and horse-hoes. He was very nearly, if not quite, the first who produced a practically useful drill. He shared the fate of all those who, as discoverers, have the temerity to disturb old systems. He was regarded by the bulk of his contemporaries as an idle, restless innovator. He was ridiculed, thwarted, and opposed in every way, not, as might have been reasonably expected, by the most ignorant, but by those who either did know, or ought to have known, better things. His neighbours regarded him as a lunatic; and the tradition in the neighbourhood of Shalborn still is, that he was even wicked enough to attempt to banish the flail from his farm, and that he had a machine in his barn at Prosperous,\* which worked a

\* Near Hungerford.



set of sticks so readily as to thrash out his corn without the assistance of a labourer. This, there is little doubt, was an attempt to construct a thrashing machine; and that it was, in those quiet days, regarded as a wonder, is proved by the existence of the tradition."\* The theory which Tull endeavoured to establish was, that *manures were altogether useless*; that effective pulverization of the soil by frequent ploughings answered every end, by bringing into contact with the roots of plants the elements of soils that were essential to their nourishment; and that the same pulverization of the earth which afforded nourishment to roots, admitted air, dew, and rain to the soil, by which it became replenished. Hence, he contended, under proper treatment, there was an exhaustless store of nourishment in all soils; and he further argued, that the intermixture of manures had been previously found beneficial only in so far as they had assisted the aeration and pulverization of the earths with which they had been combined.

Tull's theory, it will be seen, was based upon the supposition that plants consist of earth, which they take up in small particles, and that when we finely pulverize the soil we reduce its particles to a size adapted to the mouths of plants, just as with a knife we cut bread and cheese to adapt it to our own mouths! For a time, after repeated ploughing, and with the aid of new cultivators and drills, his lands, which had previously lain under the imperfect tillage of by-gone years, gave increased crops without manure, and the results were pointed at by Tull with exultation. As soon, however, as the organic matters which are common to all soils that have been imperfectly turned became exhausted by pulverizing and cropping, Tull saw his produce failing, and reluctantly returned to the employment of manures, but still insisted that their use was "not to nourish, but to dissolve." In his long-continued and anxious experiments he rendered considerable service to agriculture by proving the negative of his own proposition, and preparing the way for truths that were soon to be manifested. His system of deep-ploughing and of thoroughly pulverizing the soil, together with the introduction of horse-hoeing and drilling, and improved machinery for these systems, constituted a great gain to agriculture, which amply compensates for the error he made in the construction of a theory. This error will appear the more excusable, if we remember that of the science of chemistry scarcely anything was then under-

\* Johnson's "Farmer's Encyclopædia."

stood. At the time when Tull was blundering through a too hasty conclusion, Priestley was a boy in an academy at Daventry, and had not yet commenced his observations upon the food of plants, and the production of the various gases, nor had he experimented upon the sprig of mint which gave off bubbles of oxygen in water. One set of men believed that plants lived upon air, another insisted that their food was water, while a third, led by Mr. Tull, declared that they were solely sustained by the earth. And it is remarkable to observe, in the discussions of these different advocates, how near man may approach to the truth, and not reach it; for in every sentence of the arguments upon the theories of Van Helmont, Dr. Woodward, Mr. Bradley, and Mr. Tull, agricultural chemistry peeps out with a smile which anybody may now recognize. If, instead of each insisting upon his own views, they had set their theories together, and combined the good of all, they could scarcely fail to have made those discoveries which were begun by Priestley, improved by Davy, and confirmed by Liebig. Still, every discussion does good, and men who enter the arena of debate are worthy to stand among the pioneers of truth, though they find not the right way. Only the indolent, who close the windows of the mind against the free air of inquiry, are objects of condemnation.

Another individual to whom Agriculture stands largely indebted is Mr. John Wynn Baker, who, for several years, commencing 1766, conducted upon his farm, Laughinstown, in the county of Kildare, Ireland, a series of experiments, noting down their cost, result, and profit with the greatest care. These experiments were published by the Dublin Agricultural Society. Mr. Baker's object was to "seek for experimental matter, upon which to build a *system*," for as yet agriculture was, as had been remarked by Bacon, utterly without *principles*. These experiments embraced every kind of agricultural inquiry: the rotation of crops; the value of artificial grasses and of roots; the effect of these crops upon manures, and of the manures upon the land; the amelioration of land by root crops instead of naked fallows; the relative values of sowing broadcast and drilling; the greater economy of keeping horses or working oxen; the comparative efficiency of new and old implements; and numerous other problems which then required solution. He also established a factory for the manufacture of implements, and issued a catalogue of no less than seventy various machines and

tools, including drill-ploughs and harrows, a four-coultered plough, a scarificator with five coulter, a drain-plough, drain-spades and scoops, a winnowing machine, and numerous other inventions novel at the time. Here was an approach towards the establishment of *principles*—the principles of rural economy: for the philosophy of agriculture was still unknown. These experiments were set before country gentlemen and farmers in language that could not be misunderstood. Although principles were sought, these alone would make no impression upon the farmer: facts and figures—land at a stated rent, labour at such a cost, soil of a given kind, manures in specified quantity and description, amount and cost of seed, quarters of grain or tons of turnips produced, and the £ s. d. resulting from the experiment—were the things to make an impression. When Tull's system of soil-pulverizing failed, drilling, which had been advocated by him in connection with his pulverizing system, suffered by the disrepute. Baker's experiments revived the claims of the drill. The Dublin Society passed a resolution authorizing Mr. Baker to "allot a portion of ground, not less than one acre, for the culture of wheat in drills, horse-hoeing the intervals; and that he also allot another portion of ground, the same quantity, for the culture of wheat in broad-cast; that these two portions of ground lie as contiguous to each other, and be as much of the same sort of soil, as may be; that they be both sown with the same seed, and that Mr. Baker report his observations, resulting from this experiment, to the Society." We can do no more than state the result, which showed a profit of £1 12s. 3¼d. (on a calculated average of fifteen years) in favour of the drilled acre, making a difference in that time of £969 10s. in favour of forty acres of drilled tillage. In Mr. Baker's own words—"Let us put this calculation in another light, and we shall find that the superior profit of a drilled acre, amounting in fifteen years to £24 4s. 9d., will be a sum sufficient to purchase the fee-simple of the land, valuing the rent of the land at 18s. an acre, as in the calculations of each experiment, and that at twenty-seven years' purchase. Thus it appears, that every fifteen years the fee-simple of all the tillage lands of the kingdom is lost to the community by the common course of tillage." This was language which everybody could understand.

What Mr. Baker did in Ireland, Mr. Arthur Young also did in



England, about the same time. Upon a small farm at Bradfield Combhurst, near Bury, in Suffolk, he carried on experiments of every kind relating to agriculture. In fact, by his enthusiasm, he out-farmed himself. His experiments cost him nearly twelve hundred pounds, exclusive of the products, "not," as he says, "arising from bad husbandry, but from a resolution to try everything, even those experiments which I was sensible could not answer, but which, being recommended by writers of character, I brought to the fair test of experience alone." Of the difficulties under which the improvers of agriculture laboured from the want of proper implements, even in England at this late date, may be gathered from what Mr. Young says:—"I did not possess a drill-plough till the spring of 1766; before that time, I executed all, at a very great expense, by a line and hoe, covering with a rake. After I had a drill-plough, my expenses *decreased*; but my difficulties, from the worthlessness of the instrument *increased* ten-fold."\* Young was a man of singular genius, possessing great powers of observation and description, combined with a high degree of enthusiasm. He was just the man not to farm profitably, but to give more practical and cautious men a sufficient impetus to lift them out of the stagnation in which they had been bred. He had the generosity to see, through his own losses, his country's gain; and when he gave up farming, and commenced his Tours through several counties of England and Wales, publishing his observations for the general good, he conferred a vast benefit upon agricultural interests.†

\* We must not omit to mention a series of very careful experiments made by Mr. Marshall on a farm of 270 acres, two miles east from Croydon, Surrey, during the years 1776-8. These experiments were afterwards published, arranged in the following manner:—

THE PROCESS.	THE INTENTION.	THE RESULT.
APRIL, 1776.	SOWING CLOVER.	JULY, 1777.
Harrowed all the Wheat with a pair of very light harrows, in order to raise fresh mould for the seed to drop upon: <i>Except a belt across the middle.</i>	Is harrowing the soil before sowing Clover over Wheat beneficial to the crop?	The whole field was <i>equally</i> good.
	No. Not by this experiment.	The belt was neither harrowed before nor rolled after sowing.

In addition to the results of these experiments, Mr. Marshall published some very valuable observations upon them.

† "A Six Weeks' Tour through the Southern Counties of England and Wales," 1768-9. "A Six Months' Tour through the North of England," 1770. "The Farmer's Tour," 1770. "Tour in Ireland," 1780, etc.

In Young's time, farmers very rarely ventured beyond the boundaries of their own locality; the market or the fair were their chief opportunities of intercourse, and then there was too much eagerness to sell or buy, too much excitement from beer, to enable them to discuss anything of an improving tendency. Besides, the farmer was a man of prejudices; he would scarcely look over a hedge to watch the progress of an experiment. When the father of Mr. George Turner, of Barton, Devon, the well-known breeder of Devon cattle and Leicester sheep, who had learned something in his visits with stock to Holkham, began to drill turnips, a well-to-do neighbour looked down from the dividing bank, and said to the son—"I suppose your father will be sowing pepper out of a cruet next!" A Mr. Cooper, who went into Dorsetshire from Norfolk, could only get his turnips hoed by working himself year after year with his labourers, and refusing to be tired out by their deliberate awkwardness for the purpose of defeating his design. After he had continued the practice for twenty years, and all the surrounding farmers had witnessed the vast benefits to be derived from it, not a single one of them had begun to imitate him. Mr. Cooper, with two horses abreast, and no driver, ploughed an acre of land, where his neighbours, with four horses and a driver, ploughed only three-quarters of an acre. Yet not a labourer would touch this unclean implement, as they seemed to think it, and no farmer, with such an example perpetually before his eyes, chose to save on each plough, the wages of a man, the keep of two horses, and the extra expenditure incurred by the diminished amount of work performed in the day. No longer ago than 1835, Sir Robert Peel presented a Farmer's Club at Tamworth with two iron ploughs of the best construction. On his next visit the old ploughs with the wooden mould-boards were again at work. "Sir," said a member of the Club, "we tried the iron, and we be all of one mind, *that they made the weeds grow.*" When Young recommended the Dorsetshire farmers to fold their ewes, they treated the idea with contempt, saying, that "the flock, in rushing out of the fold, would tread down the lambs."\* Jethro Tull said that the sowing of artificial grasses was so long before it became common amongst farmers, that though Mr. Blith wrote of it in Cromwell's time, yet thirty years ago (about 1770), when any farmer in the country was advised to sow clover, he was certain to say, "Gentlemen might sow it if they pleased, but they (the farmers) *must*

\* Quarterly Review, No. 206, art. "Progress of English Agriculture."

*take care to pay their rent."* And now the case is so much altered that, although rents are increased, and the profit of clover is less since it has become common, they cannot pretend to pay their rent without sowing it.

The innovations of new systems caused deep regret to the minds of some men who were wedded to their prejudices. "Not many months ago," said Mr. Donaldson, in 1775, "I was much pleased to see a heavy-laden waggon pass through Turnham Green, in its way to Herefordshire, drawn by six oxen, with one horse only as a leader;" and he was so delighted at this "picture of a team," that he added, "If my family could have spared so much of my fortune, I would have franked the owner through every toll-bar he should ever pass!" Examples of the old kind of intelligence still remain. We know a farmer, residing within twenty miles of London, who despises even Markham's "chaulked trencher," and measures his profits and losses by keeping money, silver and gold all together, in a wooden bowl. He estimates the results of the year by the rising or falling of the money in the bowl. If he finds it sinking, he becomes irritable, and gets up a series of brawls with his wife, which generally continue until the bullion in the wooden bank appears to be again on the increase. Another, a grazier, had hoarded a considerable sum of money, and at last he resolved to put it into a country bank, which he did. He had been in the habit of going into the bank, according to his need, and paying in money, or asking for such sums as he wanted. But he had never commenced the use of a cheque-book; and when one day a clerk of the bank told him that he thought he had better have a book, and so keep his account properly, he thought it was a mark of suspicion, flew into a passion, demanded his money, and left the bank declaring that he had "zev'r'l round hunderds that they gnawed nothin' about." Such cases are now so rare, that they seem like instances of eccentricity. But there was a time, and that not very remote, when the general state of the agricultural mind rarely exhibited higher qualifications than the two men last mentioned now display. The truth of this assertion is sufficiently evidenced by the facts given in the earlier part of our history. Let not these remarks for one moment be supposed to be directed against the character of British farmers, so far as their innate qualities are concerned. a more generous, hospitable, frank, and courageous race of men it would be difficult to find. Therefore develop that nature in its higher qualifications, and recognize the truth, that



we take the best means to cultivate the soil, when we cultivate the man who is to be its master.

Young wrote and edited about a hundred volumes, nearly all of them on agriculture, and possessing merit of a very high order. Upon the establishment of the Board of Agriculture, he was deservedly appointed secretary, Sir John Sinclair being the president. In speaking of the early proceedings of the Board we may, therefore, be understood to attribute to the ability and earnestness of Mr. Young many of those useful undertakings which emanated from that body.

The Board assembled for the first time on the 4th of September, 1793, and among its first resolutions were two of a very important character. 1. To address to intelligent farmers throughout the kingdom a list of Queries, with blanks for them to insert their replies. 2. To appoint in every county a competent person to draw up a Survey of the state of agriculture in that county, and to transmit the same to the Board for publication.

The queries addressed to Farmers were of the following character, but we can only quote a few of them:—

“1. What is the nature of the soil and climate in your neighbourhood?

“2. The manner in which the land is occupied, and whether the farms are, in general, small or great?

“3. The manner in which the land is employed, whether in pasture, in husbandry, or a mixture of both?

“4. If in pasture, what grasses are cultivated? What species of stock is kept? Whether the breeds can be improved, or whether new breeds ought to be tried?

“5. Whether any of the land is watered, and whether any considerable extent of ground is capable of that improvement?

“6. If the land is employed in husbandry, what are the grains principally cultivated?

“7. What is the rotation of crops, and in particular whether green crops, as turnips, clover, etc., are cultivated, and how they are found to answer?”

The questions to be investigated by the Surveyors were of a similar nature. We select a few from their instructions:—

“11. What are the usual sorts of ploughs, carts, and other implements of husbandry?

“12. Whether oxen or cows are made use of?

“14. Whether the land is enclosed, or in open fields?

“17. Whether enclosures have increased or decreased population?

“20. What is the extent of waste lands, and the improvement of which they are capable, whether of being planted, converted into arable, or into pasture land?

“26. What is the state of the roads, both public and parochial, whether they are in good order, or capable of improvement?”

Here, then, commenced a general stirring-up of the agricultural mind of the country. Farmers, honoured by a communication from the Board of Agriculture, were obliged to think of something, ascertain something, communicate something. What a bustle must have arisen in many a farm-house, when the postman, after having sauntered up a long lane, and set all the dogs barking and geese cackling, at length handed to the smock-frocked proprietor a long official letter, with a large seal, and coat of arms! How Farmer Hodge must have knit his brows when he opened the formidable-looking document, and espied questions about his lease, and the number of oxen and sheep he possessed! Possibly he set off to some neighbouring farmer to obtain help in spelling it over, and to learn what it all meant. How relieved he must have been when, instead of its being a notice of proceedings in Chancery, it turned out to be a complimentary application for information, implying him to be a man of superior intelligence. And how he must have puzzled himself (probably with chalk and trencher) to resolve some of the problems, such as, "What is the weight of beef that will be added to a lean ox by an acre of grass, of turnips, etc., or by a ton of oil-cake?" or, "What is the annual value of the manure made by a horse?" And, when he had settled these things, what an important night it was when the schoolmaster came to write the reply, and what a memorable morning when Hodge got upon horseback to ride with his letter, for the "London Board of Agriculture," to the post-office, showing it to every neighbour he chanced to meet, and dropping in at the wayside public, to tell them all about it.\*

Beyond a general commendation of the judicious measures adopted by the Board of Agriculture to stimulate improvements, and the beneficial influences which their Inquiries, Surveys, Communications, and Premiums must have produced, we are compelled to limit ourselves to the mention of the one predominant fact, that Sir Humphry Davy, in 1802, delivered before the Board those celebrated lectures upon Agricultural Chemistry, which for the first time gave *principles* to agriculture, and brought to the aid of the experimentalist the light of philosophy. Fordyce had previously made known "certain elements of chemistry necessary to be

\* This picture cannot be said to be overdrawn. Some manuscripts written by *members of the Board* are now before us. They consist of a large school-boy scrawl, and at the foot of some of the pages is this obvious mark of literary juvenility: "PLEASE TO TURN OVER."

understood for the explanation of the principles of agriculture ;” but his system made no mention of the most material part of agricultural chemistry, *the conversion of inorganic bodies into gases, and the assimilation of gases by organic structures*. The words in which Sir Humphry Davy announced the new philosophy were these—“Vegetables derive their component principles, which are for the most part hydrogen, carbon, oxygen, and nitrogen, either from the atmosphere by which they are surrounded, or from the soil in which they grow. The process of vegetation appears to depend upon the perpetual assimilation of various substances to the organs of the plant, in consequence of the exertion of their living powers and of their chemical affinities.” He then proceeded to show that the air consists of nitrogen, oxygen, carbonic acid gas, and extraneous vapours ; that plants cannot live without air ; and that light stimulates plants to feed upon air, just as hunger prompts us to take food. That almost all soils contain certain portions of decomposing vegetable matter, which, when acted upon by water and the oxygen of the atmosphere, produce compounds capable of being absorbed by the organs of plants. That soils contain mineral elements which, though not in themselves nutritious, by acting chemically upon other constituents, adapt them to become the food of plants. That as different vegetables are nourished by different food, and as they require to be supplied with food in various manners, so they vegetate to the greatest advantage in various soils. That water is absorbed by plants in great quantities from the atmosphere in which they grow, and that hydrogen, which forms so large a proportion of the solid structures of plants, is obtained in a great measure from the decomposition of water. That animal and vegetable manures contain carbon, hydrogen, and oxygen, upon which plants live ; and that mineral manures, by a chemical agency, render the common food of plants more nutritive, and also stimulate the vegetable organs to act with greater energy upon the food. That in cultivating lands it is necessary to study with accuracy the nature of the different soils ; to discover by experiments what vegetable substances they are best calculated to support ; and to determine how far their nature may be modified by successions of crops of different vegetables, or improved by fallowing, liming, and other processes.

But this knowledge came not all at once ; nor was its elaboration



a matter of ease to its first propounders. The "Philosophical Transactions" of the Royal Society had long thrown considerable light upon the anatomy of plants; but it had not been ascertained what their wonderful organisms of cells, spirals, fibres, ducts, and tissues were for. Carbonic acid gas was discovered by Dr. Black, in 1752; Dr. Rutherford had, in 1772, called attention to nitrogen, and Priestley had experimented upon it; in 1774 Priestley discovered oxygen, and succeeded in obtaining it from the leaves of plants; the properties of Air and Water had not long been known when Sir Humphry Davy appeared before the Board, clad in the glory of a new triumph. The prior discoveries of vegetable anatomy and physiology at once dovetailed with the new organic chemistry: the parts of plants which had been viewed with wonder through the microscope, were their organs—their mouths, stomachs, veins, etc.; their food was derived from air, water, manure, soil; not by the mere act of sucking up or drawing in, but by operations of beautiful and wonderful delicacy, transmuting air, water, and earth, into new forms, taking from each only such elements as contributed to the wants of vegetable life. Thus a plant became recognized as a living thing, operating physiologically and chemically upon substances around it; and it was obvious that the easiest way to produce a perfect plant was to study the laws of its existence, and supply whatever those laws were found to require. Within the embraces of the new science came not only tall trees, beautiful flowers, and prolific vegetables, but every blade of grass assisting to clothe the earth!

How miserable the old notions of "generative salt," "spirit of mercury," and the "dust-feeding" theory of Tull, appear before the grandeur of the new science, which brought with it not only great attractiveness, but its own confirmation by positive evidence; for analytical chemistry now separated from air, water, and soils, the elements upon which plants lived; and from the substances of plants in corroboration, obtained the elements which they had consumed!

Prior to these discoveries, Helmont, ambitious to find out whence plants derived their sustenance, planted a willow of five pounds' weight, in two hundred weight of dried earth, which he watered with rain or distilled water, and, to keep any other earth from getting in, he covered it with a perforated tin cover. Five years after, weighing the tree, with all the leaves it had borne in that time, he found it to amount to one hundred and sixty-nine pounds three ounces; but the earth had





PRIZE CATTLE, CHESTER MEETING OF THE ROYAL AGRICULTURAL SOCIETY 1883.



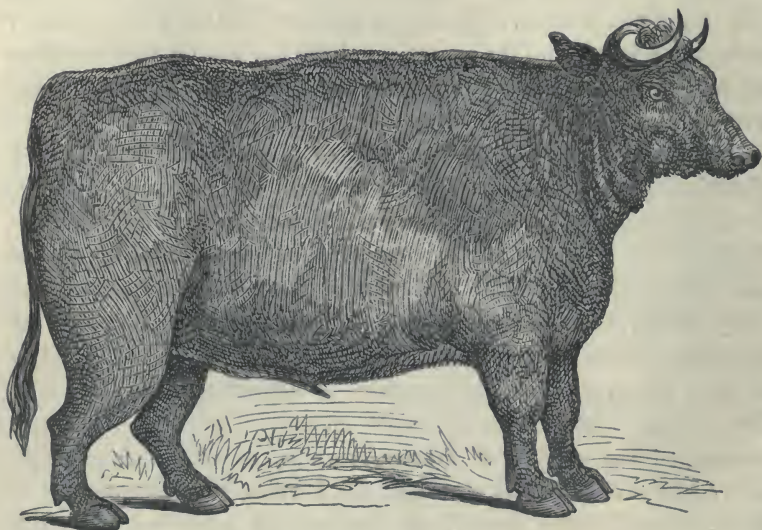
only diminished about *two ounces* ! Then men began to wrangle as to what had fed the tree. Some insisted upon it that it was air, others water, and others earth ! The truth which we now know was then concealed.

There was such a vast stride from the old state of theory to the new, that it was long before Agricultural Chemistry took a material hold of the public mind. The recent treatises of Liebig have greatly contributed to advance the science ; but the day has yet to come when the full effect of this great discovery shall be seen upon the broad acres of British soil.

We have now to record the progress of another material branch of agriculture, the selection and management of Live Stock. Before the introduction of artificial grasses and root crops, the farmer had but slight control over the development of good carcasses. Bad seasons and the scarcity of winter food were impediments that discouraged every effort ; therefore the choice of breeds and the obtaining of good crosses were matters little thought of. With a plentiful supply of food, however, arose the necessity of converting that food into flesh in the best and most speedy manner. Societies that had encouraged the growth of grasses, turnips, carrots, and parsnips, soon found it advisable to stimulate the keeping and improvement of stock. The London Society of Arts offered premiums with this view ; so did the Bath and the Dublin Societies ; but those premiums were generally for the encouragement of those " who shall during the space of one year keep the greatest weight of horned cattle," rather than for the production of fine animals, or the establishment of new breeds. At length the tide of improvement set in. Live stock was found to thrive upon the abundance of food, and enterprising farmers rivalled each other in the production of the largest beasts. Size and fat were the two things sought. The system of grazing lacked principles, as general agriculture had done ; and little was achieved in the way of improvement, except the production of monstrosities, which were wheeled about in vans, and exhibited to wondering yokels at sixpence a-head.

Mr. Robert Bakewell, of Dishley, Leicestershire, stands prominent as the most successful improver of stock. A man of singular sagacity and acute observation, he succeeded in establishing a system of animal development, which the highest men in Europe were glad to take from a plain British yeoman. In his estimation, size was almost the last

consideration. The leading idea which governed him was, to procure that breed which from a given amount of food would yield the largest quantity of profitable meat—that in which the proportion of the best meat to the amount of offal was greatest, and in which the best joints were unusually large. These characteristics, with smallness of bone

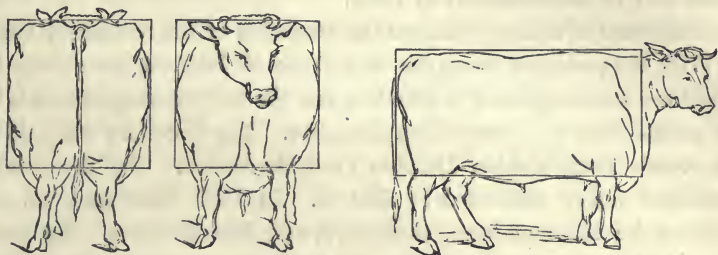


PRIZE OX, CHRISTMAS, 1800.\*

and tendency to early ripeness, were the qualities which he succeeded in establishing. And these qualities he obtained by picking out animals with the best points, and breeding “in-and-in,” until he produced a marked variety. He travelled in search of stock all over England, Ireland, and Holland. In 1787, his fame brought him reward for these labours, for in that year he let three of his celebrated Leicester rams for £1250, and was offered £1050 for twenty ewes. It was under Bakewell’s teaching that the “points of a beast,” as now the gauge of judgment, became settled. On his plan, the points to attend to in a beast are those where the valuable joints lie, the rump, the hip, the back, the ribs, and after these the flank—that is to say, the backward upper quarter; but the belly, shoulder, neck, legs, and head should be light. It costs the farmer as much to make horns, bone, and offal, as it does to make beef; but it is only the beef which is profitable to him. “The

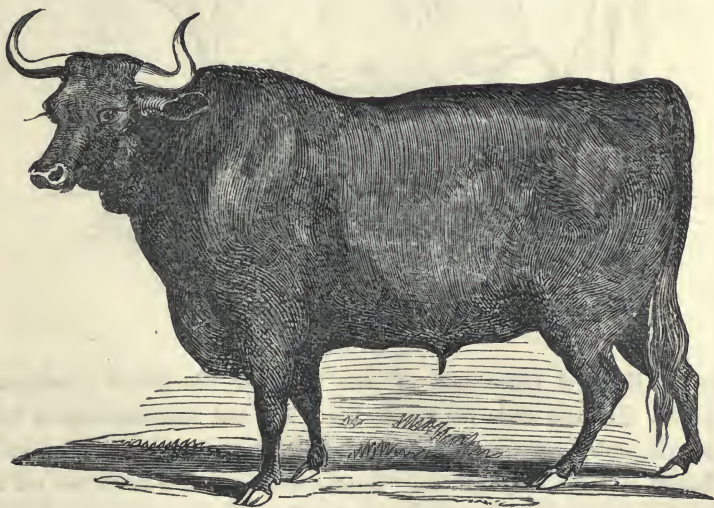
\* From a plate in the “Commercial and Agricultural Magazine,” Dec. 1800.

old notion was," says Mr. Arthur Young,\* "that where you had large bones there was plenty of room to lay the flesh on. This Mr. Bakewell has proved to be a mistake. He asserts, the smaller the bones the



truer will be the make of the beast—the quicker she will fatten—and her weight will have a larger proportion of valuable meat." Bakewell's theory was true beyond his knowledge. Hunter, Clive, and others have shown that the formation of a large bony system is the result of defective nutrition.

The rivalry of agriculturists in their endeavours to establish



PRIZE DEVON OX, CHRISTMAS, 1856.

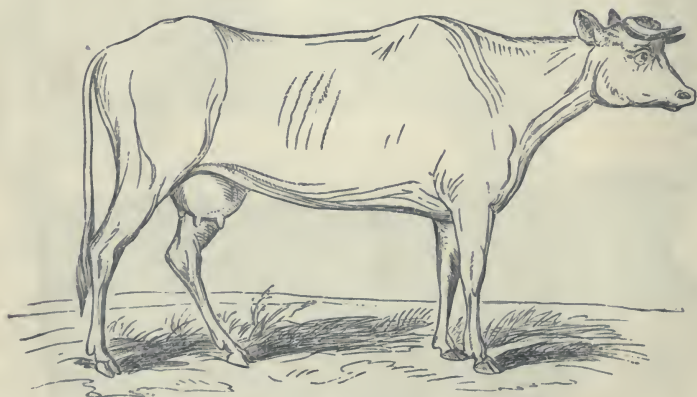
favourite breeds frequently ran very high. That between Chaplin, of Lincolnshire, and Bakewell is an instance. The one was champion of the Lincolnshire, the other of the Leicester, sheep. Challenges to

\* Young's "Tour in the East of England: Visit to Dishley," 1771.



show against each other were of frequent occurrence; and upon one occasion, Bakewell was caught in Chaplin's folds examining his flocks, an offence of such serious magnitude in Chaplin's eyes, that it led to a great deal of recrimination in print.

This state of things prompted the formation of the Smithfield Club, in 1798, the president being the late Duke of Bedford, having for its object the encouragement of breeders, and the improvement of breeds by an annual show and competition for prizes. The first show was held at Wootton's livery stables, Dolphin Yard, Smithfield. The three days' admission money amounted to £40 3s. In 1807 there were no exhibitors for the long-horn, short-horn, and Sussex prizes. The prize in the class for Devons was not adjudged, for want of sufficient merit, and there were no exhibitors for the cow prize. In 1817 the



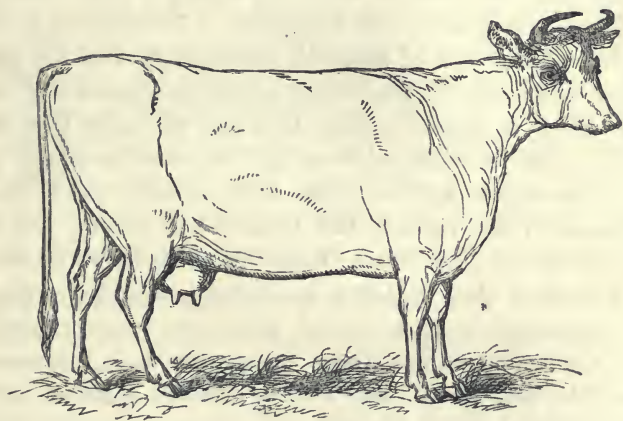
OLD JERSEY COW, FROM 1800 TO 1830.\*

Duke of Bedford (successor of the previous illustrious president) suggested that the ends for which the Club had been established had been sufficiently answered, but yielded to the opinion expressed in a resolution of the Club, that the "improvements in live stock are yet in successful progress as to the essential points of disposition to fatten, early maturity, and consequent cheapness of production." In 1821 the Duke of Bedford withdrew from the presidency, reverting to his former opinion that the ends for which the Club had been established had been amply realized. In the year of the Duke's retirement there were

\* "Journal of Royal Agricultural Society."

fourteen classes for competition; the prizes amounted to £245, and silver medals; and the amount paid to the Club by the proprietors of the ground where the exhibition took place, was about £60. In 1857 there were twenty competitive classes, £1050 and fifty-five medals given as prizes, and the amount paid to the Club, being the proportion upon the increase of admission money, was £700!

The engravings which we give of the Prize Ox of 1800, and the Prize Devon Ox of 1856; of the old Jersey Cow of 1800, and "Beauty," the Prize Cow of 1843; and of the old English Sow, and the modern cross-bred Sow, will sufficiently evidence the changes and improvements which have taken place in this important branch of agriculture; to say nothing of the substitution for the coarse long-horned Norfolk Sheep, of the improved Leicesters and Southdowns.



"BEAUTY," PRIZE COW OF 1843.\*

We may here mention, as a subject of interest to the agriculturist and the manufacturer, the endeavours which are being made to naturalize the Alpaca. It is presumed by natural historians that sheep were not indigenous to this country, though known here at a very early period. Discussions have arisen as to whether the parent stock came from the musmon of the mountains of the Mediterranean islands, or the wild Asiatic sheep tenanted the mountains of Central Asia, the Rocky Mountain sheep of the North American mountains, or the bearded sheep of Africa. An attempt is now being made to introduce

\* "Journal of Royal Agricultural Society."

the Peruvian alpaca, and thus establish, either in our island or some of her colonies, a new blood and stock to enrich our already valuable wool-produce. The superiority of alpaca wool is a matter too well understood to require an explanation; but the rapid increase of the importation of Peruvian wool may be unknown to many. The importations of wool, principally alpaca, from Peru into Liverpool have thus steadily increased:—In 1835, 8000 bales; 1836, 12,800; 1837, 17,500; 1838, 25,765; 1839, 34,543; 1840, 34,224—a fourfold increase in six years.

The Peruvian Government, naturally anxious for the interests of their country, issued a decree in 1845, prohibiting the exportation of alpacas, and condemning in heavy penalties any persons found contravening the law. The Bolivian Government did the same thing, and hence the only territories of which the alpaca is native were closed against every enterprise of this description. Nevertheless, there have not been wanting men of spirit to endeavour to leap the fence of monopoly, and secure for the British empire the benefits of a new and valuable breed of animals. Some time ago we heard that Mr. C. Ledger, by dint of indomitable energy, intimate knowledge of the habits of the alpaca, and the roads of the country, and by judicious management of the Indians, had succeeded in getting 300 alpacas fairly *en route* for New South Wales. And very recently Mr. Benjamin Whitehead Gee, of Acton, succeeded in bringing to England a flock of about thirty llama alpacas, which had been smuggled from Peru to the United States. When we saw the flock, in a meadow at Steyne Mills, near Acton, they were in excellent condition, and there was among them a lamb a few days old. Llamas and alpacas are varieties of the same stock, of which the true alpaca is the most valuable. The flock brought over by Mr. Gee are a cross between the llama and alpaca, and it is anticipated that by procuring two or three bucks of the pure alpaca breed, the alpaca may be thoroughly established. The alpaca would be found a suitable and economical stock, not only on mountain farms in Scotland and Ireland, but also on the Welsh hills, where the old breeds of sheep and goats gradually disappear. The alpaca is said to be not liable to many of the disorders incidental to common sheep, neither is its offspring exposed to the various accidents which befall the lamb. To the alpacas the snow-storm is disarmed of all its terrors; and as the stranger, when naturalized among us, would feed upon herbage left behind by cattle and sheep which had gone over



the ground before him, he would not materially interfere with the pasturage of our present herds and flocks, nor diminish the food reserved for them. The income which the farmer would derive from this new breeding stock may be readily calculated, when it is taken into account that the Southdown fleece seldom weighs more than two pounds, whereas the alpaca yields from six to eight, and his wool always commands a higher price, besides keeping for seven years, should the markets be low.\* Its flesh is considered equal to venison, and would, with its wool, doubtless improve. Its skin, when prepared, might be appropriated to various uses, such as the making of accoutrements, traces, straps, and also for bookbinding.†

From the Smithfield Club sprung the Royal Agricultural Society of England, which, since the year 1839, has exercised such a high influence upon agricultural improvement. The benefits resulting from the Club within the field of its limited operations, suggested that among its promoters were men who might give life and influence to a great National Society; and, consequently, the subject was mooted at the annual dinner of the Smithfield Club, held at the Freemasons' Tavern, on the 11th of December, 1837, when the Earl Spencer, after a previous conference with some of the members, said to the company, "If a Society were established for agricultural purposes exclusively, I hesitate not to assert that it would be productive of the

\* Walton, "On the Naturalization of the Alpaca."

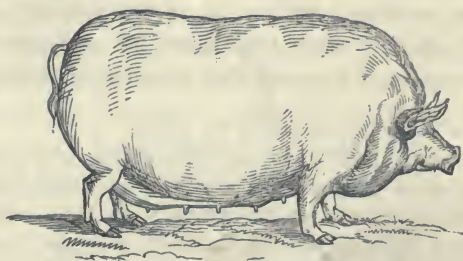
† There have been several llamas and alpacas introduced at various times. In 1841 there were in England:—at the Earl of Derby's, Knowsley Hall, Lancashire, 16; at the Marquis of Breadalbane's, 6; Duke of Montrose's, 3; Earl Fitzwilliam's, 1; Zoological Gardens, Dublin, 6; Zoological Gardens, Regent's Park, 2; J. J. Hegan's, Esq., Harrow Hall, Cheshire, 7; Charles Tayleure's, Esq., Parkfield, near Liverpool, 5; John Edwards', Esq., Pye Nest, Halifax, 6; Mr. Stephenson's, Olan, 6; Wm. Bennett's, Esq., Farringdon, 12; Surrey Zoological Gardens, 1; Zoological Gardens, Liverpool, 3; travelling caravans, 4; total, 79. Of Mr. Gee's flock, Lloyd, Beilby, and Co., of the Royal Exchange, bought eight females and two males, which have been sent to Sydney. A committee, consisting of William Westgrath, Esq., Edward Wilson, Esq., and J. F. Sargood, Esq., 4, Princes Street, Mansion House, purchased eight bucks and fifteen does, to present to the colony of Victoria. Mr. Patterson, of the firm of Patterson and Cockran, of Glasgow, purchased three; and Miss Burdett Coutts bought three, including a lamb about four days old. Mr. Gee thinks that the animals hitherto introduced have been too much regarded as curiosities, or ornaments for gentlemen's parks. They have been divided; directly a lamb has been dropped it has been made a present to some one of note. To do well, and to answer the true object of their naturalization, they should be kept in considerable flocks.

most essential benefits to the English farmer;" to which the Duke of Richmond afterwards added that he felt it his duty to give his support to his noble friend's exertions to establish such a Society.\* From that



OLD ENGLISH SOW.†

time the Royal Agricultural Society of England took its rise. At the first meeting of the Society, held at Oxford in 1839, there were fifty-six prizes awarded for cattle, and five prizes for improved implements. At



MODERN CROSS-BRED SOW.‡

the meeting lately held at Chester (July, 1858), there were ninety-two prizes offered for live stock of all kinds, fifty-three prizes for poultry, and fifty-five for implements. There were 1026 entries of live stock, exclusive of poultry; and the Official Catalogue of Implements occupied nearly 350 pages of closely-printed matter!

\* Gibbs's "History of the Smithfield Club."

† Low's "Domesticated Animals."

‡ Ibid. Obtained by a cross between a native boar, and a sow of the Siamese race.

In recounting what has been gained by Agricultural Progress, it will be unnecessary to enter into details of the Systems of cultivation now pursued. We need only point out the RESULTS arising from those improvements which have been indicated in the course of the previous history. Those results are of two kinds:—

I. BENEFIT OF THE NATION.

II. PROSPERITY OF THE AGRICULTURAL INTEREST.

I. The Benefit to the Nation consists in the greatest of all natural blessings, a plentiful and settled supply of food, chiefly the growth of our own soil. Since the time when Malthus enunciated the shameful doctrine that famine, pestilence, and war were checks designed by God to decimate the people of his own creation, the population of Great Britain has *doubled* itself.\* In 1801, there were, on an average, in England and Wales, *four acres* of land to every person, and twenty-three acres to every inhabited house; in 1851, there were, on an average, *two acres* of land to every person, and eleven acres to every inhabited house. Yet the people are now better fed, and the blessings of a variety of good and cheap food are more widely diffused than at any former period of our country's history. Thus we see that, in half a century, two people have to be sustained where only one existed before, in England and Wales; and the increase for the whole area of Great Britain is less than this only by some 10 per cent. With the increase of people, a bountiful Creator, using the hands of Science and Industry, has sent Food—not Famine! At the time when Malthus, sitting in his gloomy study, summoned around him the Genii of Small-pox, Plague, Famine, and War, and communed with them as the angels of a stern Providence, whose law they declared to be, that population must always be kept down to the level of the means of subsistence, Sir Humphry Davy looked from the window of his laboratory upon the face of a smiling country, and, taking a nobler view of the attributes of the Deity, declared that, by the scientific cultivation of the land, the means of subsistence might be increased according to the demands of the population. This was the doctrine of Sir Humphry Davy and scientific agriculture, as against that of Dr. Malthus and the laws of extermination. The most elaborate and authentic document ever prepared upon the internal state of the resources of any

\* The population of Great Britain and of the islands in the British Seas, amounted to 10,917,433, in March, 1801; and to 21,121,967 in March, 1851.



country—the Census of Great Britain, 1851—shows that, notwithstanding the enormous increase of population, the quantity of produce, either consisting of, or exchangeable for, the conveniences, elegancies, and necessities of life, has, in the mass, largely increased, *and is increasing at a more rapid rate than the population.*

Porter, in his “Progress of the Nation,” shows that in wheat alone the increased produce, in forty-nine years, has been equal to the support of an additional population of five and a-half millions. And when we take into account the increased and improved produce of the field in peas, beans, carrots, turnips, beet, potatoes, and other vegetables, and the increased and constant supply of butcher’s meat through the growth of fodder for cattle, we become sensible of the great profit resulting to our country through Agricultural Progress. Within the memory of many persons now living, the safety and yield of each harvest were matters of terrible anxiety to the nation, and the lives of many thousands of people were saved, or lost in proportion to the scarcity or plenty that prevailed. Our anxieties now simply rest upon the prices of the market, and the effect of comparative scarcity upon labour and commerce; but we never think of famine. This is because there is not only a wider and a better cultivation of the soil in respect of grain, but nutritive vegetables of so many kinds are introduced, that the season which proves ungenial to one stimulates the growth of another of a different habit; and hence the very causes of the frequent famines of the olden times have now a tendency to correct their own consequences.

The nation is benefited by the great examples of what has been accomplished, and encouraged to have faith in the improvements that yet may come. The history of Holkham will present itself to the public mind so long as there remains an uncultivated tract of land in the kingdom. When, in 1776, Mr. Coke succeeded to the estates of the Leicester family, he found one part of it a blowing sand, another a sharp flinty gravel, and no part of the soil of Holkham so good as Hounslow Heath. On these strata, aided by the skill, capital, and enterprise of the founder of its agriculture, the blowing sand and the flinty gravel became a fertile estate, the pride of the agricultural world. When Dr. Rigby visited Holkham, in 1816, he was astonished at the exuberance of the crops, the richness of the soil, and its unexampled freedom from weeds. The crops that attracted his notice were extensive ones of wheat and barley; he had never seen such crops

before. Mr. Coke (afterwards Earl of Leicester) estimated the wheat from ten to twelve coombs per acre, and said that nearly twenty coombs per acre of barley had been grown upon it, which was at least double the average crop in the county of Norfolk, and nearly treble that of many of the counties in the kingdom; and yet so sterile was this part of the estate considered, when he came into possession of it, that a large tract of it had been let, tithe free, on a long lease, at three shillings per acre; and Mr. Coke offered another lease of twenty-one years at five shillings per acre, but the tenant had not the courage to take it. At that time wheat was not cultivated in the district; in the whole tract, between Holkham and Lynn, not an ear was to be seen, nor was it believed that one would grow. And very properly did Dr. Rigby remark, that "if Holkham could be brought from what it was to *what it is*, then might the whole of the United Kingdom, except where elevation of land prevents the ripening of corn, be brought to the same state of cultivation."

II. Prosperity to Agricultural Interests arises from the fact, that agriculture has discovered within itself expansive power and wealth, which it was never supposed to possess. The farmer has passed from the time of ignorance and sloth, when "the eie pittied to see the great weakness and decay of our ancient and common mother the earth, which is grown so aged and stricken in yeares, and so wounded at the hart with the ploughman's goad, that she beginneth to faint under the husbandman's hand," to a time when the restoration of the soil has so far advanced, that it is found necessary, in some instances, to reduce its richness by taking two white crops in succession.

The farmer now has the means of acquiring information upon every subject affecting his interests. The difficulties which hitherto lay in the way of improvement were pointed out by Mr. Gladstone, at the Chester meeting of the Royal Agricultural Society. "If we look," said he, "to the case of manufactures, it is their nature to collect themselves in enormous masses around great centres of industry. If we look to commerce, incessant communication between every part of the commercial system of the country is the very vital air it breathes, and it is naturally inseparable from commercial development. But with agriculture the case is different; for, on the contrary, its nature is to be gathered around local centres,

which, under ordinary circumstances, have little or no communication with one another. It is, in comparison, an isolated art, and therefore it might follow, under general circumstances, that agriculture was languishing in various quarters of the country, simply from the want of knowledge of the progress achieved in other portions of the land." Then he spoke of the excellent influences of the Royal Agricultural Society bringing together the men and the minds of all parts of the kingdom—the stock of Devonshire, the horses of Suffolk—the various products of England. By such means the agriculture of England is rapidly attaining to the position to have but one heart and one mind—one common pulse that causes the circulation of the vital fluid throughout the whole system—one common stock, into which everything that skill, industry, intelligence, and capital has achieved in every part of the country, is made the common property of the other portions of the kingdom. If the farmer is unable to select machinery, the award of judges is ready to guide him; if he cannot analyze soils, the chemist is ready to assist him; if he wishes to see the cultivation of any part of the kingdom, railways are ready to convey him; and if a new crop, or a new breed is anywhere introduced, the newspaper at once places him in possession of the facts.

The enterprising farmer can now obtain an unlimited supply of material to carry out his improvements. Agricultural chemistry has discovered, in a variety of substances, those elements of nutrition which are essential to plants, and can point out with certainty the description of soils for which those substances are adapted. The discovery of the use of bones as manure was a matter of accident in the neighbourhood of a dog-kennel in Yorkshire, and Mr. Nelson, one of the late Lord Yarborough's tenants, made it his boast that he had realized £80,000 out of his farm by employing bones as manure before other people knew how to use them. Within the last five-and-twenty years the application of this manure to light soils has become very general, and the result has been to raise the value of such lands very materially. Bones are now brought from foreign countries, and even battle-fields have been cleared of the remains of the dead to help to give sustenance to the living. Though the time has not arrived when the "sword shall be beaten into a ploughshare," the wreck of battles has been gathered up to yield support to those who, it may be hoped, will prove wiser and better generations. The numerous herds of cattle that roam in a state of



nature over the plains of South America used formerly to be slaughtered for the sake of their hides, tallow, and horns, which were brought to Europe. Their bones were left to whiten on the plains, but these are now carefully collected together, and ships are regularly despatched to be loaded with them for the use of agriculturists. A new treasure was also found in the deposits of birds on certain islands in the Pacific and off the coast of Africa, and with this exuvia of the winged creatures of by-gone ages the soil of our British island is enriched. Agricultural chemistry makes known at once that which previously required years of experiment, and which frequently failed to produce any good result for the want of accurate observation. In fact, the new science—for such it still is—teaches us that in the debris of the world's life and death of ages there are treasures stored up for the use of coming generations, and that the vegetable kingdom is the great sanitary machine, distilling from the filth and refuse of towns and cities those nourishing substances, rich colours, and sweet perfumes, which give life to animals and impart beauty and joy to the world.

Another great power is now waiting the command of agriculture. Steam cultivators, ploughs, thrashing and reaping machines, and other useful inventions, are now in that probationary state which usually precedes adoption. That steam has already done for agriculture more than agriculturists themselves are aware, may soon be demonstrated. The writer of the excellent article in the "Quarterly Review," to which we have frequently referred, places the matter in the following light:—

"For several years past, all the railway companies have agreed to convey live stock free, and implements at half their usual charges, to and from the shows of the Royal Agricultural Society, the railway company, at the town where the shows are held, generally providing accommodation for the mechanical compartment. This at Chelmsford cost the Eastern Counties upwards of £3000. Railway fares and speed could alone bring the number of shilling-paying strangers who contribute to the enormous expense of these exhibitions. The population of the city of Salisbury, including men, women, and children, only amounts to 10,000; but the visitors to the show-yard, in 1857, were over 35,000. This is of itself a striking proof of the wide and eager practical interest which is felt in agriculture, for there is little to gratify the eye of mere holiday gazers; and when in addition we consider the mountains of coal, iron, timber, artificial manure, lime, and chalk, conveyed in the one direction, and the quantity of live stock and corn in the other, we cannot help coming to the conclusion that George Stephenson's locomotive has been the great cultivator of the farmer's mind and the farmer's land—the great agent for the extraordinary advance which British agriculture has achieved in the last quarter of a century."

Such, then, are the features of Agricultural Progress, of which those only can estimate the full value who will look back and carefully contemplate the Past, and estimate in all their force the troubles through which Agriculture has struggled. That we have not yet reached the zenith of our agricultural glory is clear; every one may see, in the scientific discoveries and mechanical inventions of late years, the dawning of an era of greater improvements, of which we can now form no adequate conception. We are happy to be able to introduce, in the closing pages of this history, the conclusions to which Mr. Alderman Mechi has arrived, after years of experience, at Tiptree Hall. Mr. Mechi was kind enough to furnish these "conclusions," at the Author's request, and we are glad to perceive that he still looks far beyond present achievements, and has a perfect faith in the further "Progress of Agriculture."

"MR. MECCHI'S CONCLUSIONS.

"1. That my farming has paid me a handsome profit for several years.

"2. That my land is increasing in fertility.

"3. That my neighbours would be in a much better position than they now are, had they to pay, as I do, an interest or £30 per acre, expended in improvements.

"4. That there are millions of acres in this kingdom imperfectly cultivated, and on which might be expended, with advantage to landlord and tenant, at least £25 per acre, on drainage, squaring, levelling, sub-soiling, chalking, claying, manuring, clay-burning, irrigating, improved buildings and roads, steam-machinery and improved implements.

"5. That an enormous economy and advantage would result from such improvements by saving in seed, for it would become an imperative necessity to diminish the quantity sown in proportion to the increasing fertility of the soil.

"6. That the practice of sowing or drilling from three to six bushels of oats per acre, two to three bushels of wheat per acre, and other things in proportion, is ruinously injurious by largely diminishing the growing crop.

"7. That the false economy of neglecting to hoe and weed every crop, so as to prevent the growth and seeding of weeds, tends largely to diminish the crops and lessen the farmer's profit.

"8. That whilst our agriculture has much improved, and is in advance of many nations, it is sadly in arrear when tested by a high standard of perfection.

"9. That the use of steam-power, on farms, is by no means sufficiently general.

"10. That town sewage, and general irrigation, should become the means of agricultural increase and profit.

"11. That there is a great deficiency in the manurial powers of agriculture arising from waste and miscalculation; that by making much more meat per acre, the resulting manure would be proportionately increased and the crops enlarged.

"12. That county agricultural colleges for farmers' sons, and schools and reading-rooms for our labourers, would enlighten and enlarge the agricultural mind, with a profitable result."

In the year 1844-5, a new statistical Survey of Scotland was made by the clergy of the Scottish Church. An interval of forty years had passed since a former statistical account was furnished by the clerical body, at the request of Sir John Sinclair, the great promoter of the Board of Agriculture. In this elaborate Survey the agricultural improvements of every parish were pointed out. The general character of those improvements may be gathered from the account of the parish of Inveresk. "An improved system of husbandry prevails. Some of the farms are of large extent, under the management of skilful tenants. Tile-draining has recently been practised to a considerable extent, and with complete success. By this important improvement, by a skilful application of manures, and by a judicious selection of the best seeds, as well as by the practice of drilling grain crops, the produce of the land has been greatly increased. Turnip husbandry is successfully practised; the Swedish variety appears to thrive particularly well. In a good many instances, the crop is eaten off the land by sheep, a system which is found materially to improve light, sandy soils. The farm-houses and steadings are of a substantial, improved, and superior description. On one farm, a steam-engine has been erected for thrashing, and there are upwards of a dozen steam-engines in the parish employed for various purposes. Besides lime and dung, and compost of lime and earth, a considerable quantity of rape-cake and crushed bones has lately been used as manure." In the preface to these Surveys, which occupy fifteen thick volumes, the committee superintending the publication remark, that they "do not hesitate to announce that they now present, not merely a new statistical account, but, in a great measure, *the statistical account of a new country.*"

At the meeting of the Royal Agricultural Society of Ireland, in August, 1858, the Lord-Lieutenant produced the following statistics of the increase of agricultural wealth in that part of the kingdom:—"Five millions have been granted by Parliament for internal drainage, improvement of rivers, and other things of that sort, and sixteen millions in the way of loan. It is only of late years the results of those great efforts have begun to tell, but they have begun to tell in a manner the most satisfactory. The first item is the enormous increase of live stock in Ireland since 1852. In round numbers there has been an increase of 85,000 horses, 570,000 cattle, 750,000 sheep, 330,000 pigs. Calculating them at the moderate price of £8 for horses, £6 10s. for cattle, £1 2s. for sheep, and £1 5s. for



pigs, it makes the enormous increase in the value of property in Ireland of live stock alone of £5,000,716. As regards the increase of acreage that is now under cultivation, notwithstanding the enormous increase of pasture, in 1852, in round numbers, the acreage under cultivation was 5,739,000, and in 1857 it was 5,881,000, making an increase of 49,700 acres."

The present annual value of the agricultural produce of the *United Kingdom* has been estimated at—wheat, £66,000,000; all other grain, £51,000,000; hay, seeds, garden and green crops, £30,000,000; cattle, £30,000,000; sheep and lambs, £15,000,000; potatoes, £25,000,000; wool, £8,000,000; butter, £5,000,000; cheese, £5,000,000; poultry, milk, eggs, fruit, and vegetables, £3,000,000; horses, £3,000,000; pigs, £2,000,000; other animals, £1,000,000; hops, £1,500,000; timber, £2,500,000; lands (uncultivated), £2,000,000. **TOTAL, £250,000,000.** Unfortunately there are no reliable statistics upon which to ground a calculation; yet there can be little doubt that, since the introduction of drill husbandry, the total value of agricultural produce in the *United Kingdom* has **MORE THAN DOUBLED.**

This, then, is the reward which has followed the labours of those who at various times, and under great obstacles, have sought to increase the productiveness of the soil. Without this increase in our internal resources, what would have been the condition of our rapidly increasing population? Then, indeed, famine and pestilence would have been beneficent visitors, to assuage by death the terrors of unsupported life. But Science and Industry have gone hand-in-hand, and millions of people now exist who otherwise would never have lived to give a retrospective application to the sentiment, that "WHOEVER HAS MADE TWO EARS OF CORN, OR TWO BLADES OF GRASS, TO GROW UPON A SPOT OF GROUND WHERE ONLY ONE GREW BEFORE, DESERVES BETTER OF MANKIND, AND HAS DONE MORE ESSENTIAL SERVICE TO HIS COUNTRY, THAN THE WHOLE RACE OF POLITICIANS PUT TOGETHER."

(END OF THE "AGRICULTURAL SECTION.")



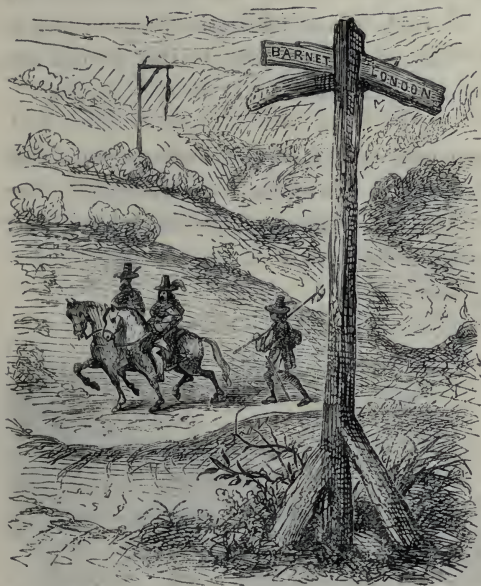


"This was what is termed on the road, a long fall of ground, and the coach rather pressed upon the horses. The temper of the race-horse became exhausted; breaking into a canter, he was of little use, and there was then nothing for it but a gallop. The near leader only wanted the signal; and the point of the thong being thrown lightly over his back, they were off like an arrow out of a bow: but the rocking of the coach was awful, and more particularly so to the passengers on the roof. Nevertheless, she was not in any danger: the master-hand of the artist kept her in a direct line; and, meeting the opposing ground, she *studied*, and all was right."

THE STAGE COACH.



## II.—ROADS, CARRIAGES, AND WATER-CONVEYANCES.



THE Roads of a country may be compared to the veins and arteries of a living organism. They communicate life and vigour to the parts to which they lead. They constitute the second social necessity of mankind: man needs first, land to dwell upon; second, roads to move upon, that he may turn the land to account, and bring to his dwelling those things of necessity which grow or exist beyond his immediate

reach. In the embryo, just kindling into life, the first symptom of vitality is a slight motion, which is followed by the formation of one vessel, or road, from the normal heart, then another, and so on, until numberless communications exist between the elements of nutrition and the centre of organization, and then the system gathers power, grows, lives, and rejoices in a healthful vitality. Set men down in an uninhabited country, and, like the embryo, they will at once throw out arms of communication. Their feet will tread down the first trackways, their hatchets will fell the trunks and limbs of trees which obstruct their movements; they will cast stones into miry places, and across brooks, that they may find safe passage; and when they have heavy burdens to carry, they will ease themselves by the employment of some beast of labour, or drag their load along the beaten ground

upon a rude machine; if a water-course runs in the direction of their path they will form a raft, and floating their burden thereon will ease the toils of their journey. Here we have the rudiments of the Road, the Bridge, the Cart, the Barge, the Canal.

The history of Roads may at first seem to the reader to be a dry and uninteresting subject. That is a misconception. Of the various narratives of Progress few will be found to present such attractive features, and none will exhibit a more rapid march from the time when the importance of the subject was understood, or be proved to have wrought greater changes for good upon the mental and moral, as well as the material, interests of the British people.

Enough has already been said of the early Britons to show that they knew little of the advantages or the modes of road-making. But it is interesting to know that in Wiltshire, Berkshire, and other parts, there are still unmistakable traces of the track-ways and ridge-ways of our British ancestors.



ANCIENT BRITISH TRACK-WAY.

The one good thing which the Romans did for Britain was to construct those great roads which facilitated communication with the principal parts of the island. The walls which they built as lines of demarcation and defence have been thrown down; but their roads remain, or have disappeared before improvements of a kindred nature. The very stones of their walls and fortresses have been broken into bits, and cast upon the highways to sustain the communication and traffic of better times.

Of the four Roman roads, or "streets," as they were called,

Leland says, "the *Fosse* appears to have gone through *Tottenesse* through *Lincoln* to *Cathnesse*; *Watling-street* from *Dover* to *Chester*; *Erming-street* from the Southernmost part of the island directly North; and *Icknild* from East to West." Here were four great highways from sea to sea; and it is remarkable that a part of one of those early veins of communication runs into the very heart of the metropolis, and is still known as Watling Street. Those roads must have been vast undertakings in their time, and the Britons, who complained that "the Romans put their hands and bodies to the drudgery of clearing woods and paving fens," never surmised how largely they were contributing to the future prosperity of the country.

There is little known of what took place respecting roads and conveyances during the fierce wars of the Saxons and the Danes and the Conquest by the Normans. The probability is, that it was not until several reigns after the Conquest, when comparative quiet was restored, that attention was given to the improvement and extension of the public ways. At that point, therefore, the real historic interest of the subject begins.

Of the state of society at that time it is necessary something should be known, that the relation which the well-ordering of the public ways bears to the condition of national morals and prosperity may be fully comprehended. In the reign of Edward I., several Acts were passed for the suppression of robberies, murders, burning of houses, and other offences, which crimes were then very frequent, and much on the increase. One of those Acts directed that, "for the greater security of the people, walled towns shall keep their gates shut from sun-set to sun-rising; and none shall lodge all night in their suburbs, without his host shall answer for him. And all towns shall be kept, as in times past, with a watch all night at each gate, with a number of men, from Ascension Day to Michaelmas." Nor were the roads and country places alone exposed to the offences of desperate characters. A law was passed in the same reign, which, after reciting that murders, robberies, and riots were committed in the city of London, not only in the night, but in the open day, enjoined, "that none be found in the streets, either with spear or buckler, after the curfew bell of the parson of St. Martin's-le-Grand rings out, except they be great lords, and other persons



of note ; also that no tavern, either for wine or ale, be kept open after that bell rings out, on forfeiture of forty pence."

In 1285, in the same reign, the first law relating to highways, or roads leading from one market to another, was passed. But this Act, so far from being designed for the promotion of public intercourse and commerce, was principally intended for the prevention of robberies. It directed "those ways to be enlarged where bushes, woods, or dykes be, where men may lurk; so that there be neither dyke, tree, nor bush within two hundred feet on each side of those roads, great trees excepted. If the lord of the soil neglect to do as above, and robberies ensue, he shall be answerable for the felony, etc. For the king's demesne lands and roads the like rule shall hold, and no park shall be less than two hundred feet from the highways."

In the reign of Edward III. we find an account of a very early toll, probably the first ever levied for the repair of public ways. In the year 1346, Edward granted "his commission to the Master of the Hospital of St. Giles's-in-the-Fields, without the city of London, and to John of Holborn, to lay a toll on all sorts of carriages, for two years to come, passing through the highway leading from the said hospital, to the Bar of the Old Temple of London. Also through another certain highway, called Perpoole" (now Gray's Inn Lane), "joining to the before-named highway." Which roads were, "by the frequent passage of carts, waggons, and horses, to and from London, become so miry and deep as to be almost impassable; as also the highway called Charing"—probably what is now called St. Martin's Lane, leading to Charing Cross, which was then the village of Charing.

From that time we meet with nothing relating to this subject (except the paving of the suburbs of London, etc.) till Henry VIII.'s reign, in which there were five statutes—two for altering or removing certain kinds of roads in the Weald of Kent, and in "the deep ways of Sussex"—the old ways being described as "worn out;" a third for mending a lane near the city of Chester; the fourth for the repair of bridges, and of highways at the ends of bridges. The Act 7 Henry VIII. was passed to encourage the repair of the highways in Sussex, which were described as having "become so deep and noyous by wearing and course of water, and other occasions, that people cannot have their passages and carriages by horses upon or by the same way, but to their great pains, perils, and jeopardy." This Act simply gave the right to any person to lay out a new way

on his own ground, and offered him, as recompense, the ground of the old way, to be added to his lands. The words of the Act were, that "if any person or persons in any place within the said weld of the said county, of his good mind and disposition, without any value of good by him or by them to be received for the same, will, for the common weal of the king's people assign and lay out a more commodious way," etc., such person or persons "shall and may, for the same new way, so assigned and used, receive and hold \* \* \* the soil and ground of the old way."

Another Act in the same reign, in consequence of frequent robberies and murders committed in the counties of Gloucester and Somerset, in the parts adjoining the Severn, directed that no boatman or ferryman should convey any passengers between sunset and sunrise, and that persons keeping ferries should give security that they would not at any other times convey passengers, goods, and chattels, except for such persons as were known to them. But commerce beginning to increase considerably in the reign of Philip and Mary, whereby the roads became much more frequented by heavy carriages, an Act was passed in the year 1555, which recited, "that the highways were then very noisome and tedious to travel in, and dangerous to all persons and carriages; wherefore be it now enacted, that every parish shall annually elect two surveyors of the highways, to see that the parishioners, according to their lands, abilities, farms, etc., send their carts, horses, men, and tools, four days in every year for mending the roads." It was afterwards complained that this conscription of implements and labour was in many cases inoperative: farmers and landholders sent their worst horses and carts, and their laziest men; the men, looking upon it that "everybody's work is nobody's," lolled about upon the roadside for the four days; and those who did actually and honestly repair the roads employed their labours exclusively upon the portions which led to their own farms, and thus the public ways benefited very little by the enactment. There were five other Acts relating to roads in Mary's reign, nineteen in Elizabeth's, and one in James the First's. After which there were no others until the Restoration. Notwithstanding these legislative efforts to maintain in passable condition the highways of the country, the increase of traffic was so great, that the roads suffered severely; and, in 1629, Charles II. issued a proclamation, commanding that "no common carrier, or other person whatsoever, shall travel with any

waine, cart, or carriage, with more than two wheels, nor with above the weight of twenty hundred, nor shall draw any waine, cart, or other carriage with above five horses at once." In 1663, the first Turnpike Act, 15th Charles II., was passed, which set forth that, "The ancient highway and post-road leading from London to York, and so into Scotland, and likewise from London into Lincolnshire, lieth for many miles in the counties of Hertford, Cambridge, and Huntingdon, in many places of the road, by reason of the great and many loads which are weekly drawn in waggons through the said places, as well by reason of the great trade of barley and malt that cometh to Ware, and so is conveyed by water to the city of London, as other carriages, both from the north parts, as also from the city of Norwich, Saint Edmund's-bury, and the town of Cambridge, to London, is very ruinous, and *become almost impassable*, insomuch that it is very dangerous to all his Majesty's liege people that pass that way."

In the "Description of Britaine," prefixed to "Holinshed's Chronicles," by William Harrison, 1586, there is an account of the state of the public highways, which is exceedingly interesting, having been written by an actual observer:—

"To speake generallie of our common high waies through the English part of the isle (for of the rest I can saie nothing), you shall understand that in the claie or cledgie soile they are often verie deepe and troublesome in the winter halfe. Wherefore by authoritie of Parlement an order is taken for their yearlie amendment, whereby all sorts of the common people doo imploie their travelles for six daies in summer time upon the same. And albeith that the intent of the statute is verie profitable for the reparations of the decaied places, yet the rich doo so cancell their portions, and the poore so loiter in their labours, that of all the six scarcie two good daies works are well performed and accomplished in a parish on these so necessary affaires. Besides this such as have land lying upon the sides of the waies doo utterlie neglect to ditch and scowre their draines and water-courses, for better avoidance of the winter waters (except it may be set off or cut from the meaning of the statute) whereby the streets doo grow to be much more gulled than before, and thereby verie noisome for such as travell by the same. Sometimes also, and that very often, these daies works are not employed upon those waies that lead from market to market, but each surveior amendeth such by-plots and lanes as seeme best for his owne commoditie, and more easie passage into his fields and pastures. And whereas in some places there is such want of stones, as thereby the inhabitants are driven to seeke them farre off in other soiles: the owners of the lands wherein those stones are to be had, and which hitherto have given monie to have them born awaie, doo now reape no small commoditie by raising the same to excessive prices, whereby their neighbours are driven to grievous charges, which is another cause wherefore the meaning of that good law is verie much defrauded. Finallie, this is another thing likewise to be considered of, that the trees and bushes growing by the streets' sides, doo not a little keep off the force of the sun in summer for drieing up of the lanes. Wherefore if order were taken that their boughs should continuallie be kept short, and the bushes not suffered to spread so far into the narrow paths, that inconvenience would also be



remedied, and manie a slough prove hard ground that yet is deepe and hollow. Of the daily encroaching of the covetous upon the hie waies I speak not. But this I know by experience, that whereas some streets within these five and twenty yeares have been in most places fiftie foot broad according to the law, whereby the traveller might either escape the steepe, or shift the mire, or pafse the loaden cart without danger of himselfe and his horse; now they are brought into twelve, or twentie, or six and twentie at the most, which is another cause also why the waies be the worse, and many an honest man encumbered in his jounie."

Of the frequency of robberies and murders when the public ways were in a neglected state, we have further evidence in a paper of the time of Cromwell, which states that "at the sessions and jail delivery for Newgate there were numerous notable highway robbers, *too numerous to particularise*. One man was pressed to death, because he refused to plead. Seven men and one woman were condemned to be hanged; twenty-four burnt in the hand," etc.

About the same time, there were frequent appeals to the Government for the suppression of robberies. One writer suggested that "parties of horse be stationed all along the avenues of the city of London, so that if a coach or waggon wanted a convoy, two or three or more may be detached by the commanding officer. These shall be registered, and answerable for the charge, and for encouragement shall receive so much per mile, or on the whole, convoy money." For persons on foot there were also to be armed attendants, who were to be requited in a similar manner. Books were also published exposing the practices of robbers, giving travellers warning of certain places infested by them, and explaining various manners and peculiarities by which the best disguised thieves might be detected. So that travelling in those days required strong nerve; and the contemplation of the beauties of nature were liable to be broken in upon by impressions of anything but a poetical description.

In the reign of William and Mary, an Act was passed, the preamble of which set forth, that notwithstanding the previous "divers good and necessary laws," the highways were not "in many parts sufficiently amended and repaired, but remain almost impassable; all which is occasioned, not only by reason of some ambiguities in the said laws, but by want of a sufficient provision to compel the execution of the same." This Act directed that the previous laws should be put in force, and that penalties should be imposed upon the persons appointed to carry them out, if they failed to do so. All cartways leading to market-towns were to be made eight feet wide at the least, and as near

as may be even and level, and no causeway for horses was to be less than three feet in breadth; an assessment might be made for the repair of the ways. The Act also set forth that as "divers waggons and other carriers, by combination among themselves, have raised the prices of the carriage of goods in many places to excessive rates, to the great injury of trade," the justices of the peace should have the power of settling the rates to be charged for land carriage.

An Act of the same reign, consequent upon the expiration of the powers under the Act of Charles II., provided for the further enlargement of the highways of the kingdom, setting forth that the previous improvements had been inadequate, and directed that when two or more cross-ways met, posts should be put up with inscriptions thereon in large letters, showing the name of the next market-town to which each of the joining highways led.

In the reign of Anne, an Act was passed confirming a previous enactment which compelled waggons to use a pole or shafts with their wheel-horses, and prohibiting them from using more than six horses or oxen to one waggon at a time, except up-hill; enforcing the penalties of the said Act, and authorizing the seizure of cattle employed by offenders. The object of this law was to prevent the drawing of heavy loads, by which the soft roads then existing were cut into deep ruts.

In the reign of George I., so much of the previous Act as allowed waggons to use six horses was repealed, and *five* horses only allowed, except for purposes of husbandry, or for his Majesty's service; the reason of the alteration being that the excessive weights laid upon waggons or other carriages drawn by six horses, were found by experience to be so heavy that the roads were thereby rendered almost impassable. Another Act of the same reign set forth that the roads within ten miles of the cities of London and Westminster had greatly decayed, through the carriage of very heavy loads of meal, malt, bricks, and coals. The Act provided that after March 25, 1720, no waggons or carts should carry more than twelve sacks of meal, each sack containing five bushels and no more; no more than twelve quarters of malt, nor more than seven hundred and a-half of bricks, nor more than one chalders of coals. Persons offending were to forfeit one of the horses employed to draw the load.

About the year 1700, the Rev. Mr. Brome determined to see the

kingdom, and for this purpose he undertook a series of journeys, in which he progressed in a very slow and laboured manner. In 1707 he gave the public an account of "Three Years' Travels in England, Scotland, and Wales." Mr. Brome was the Rector of Cheriton, in Kent. He may, therefore, be regarded as an intelligent man of his time, and one who would not be likely to palm deceptions upon his readers. He commenced his narrative by the significant announcement, that he began his journey as soon as "*the spring had rendered the roads passable.*" The account of his travels is chiefly confined to the notice of antiquities, curiosities, and the castles and seats of the nobility; he frequently makes mention of "employing guides" to conduct him, and gives descriptions of various natural wonders that quite rival the romances of foreign travel. The narrative is divided into a series of journeys, one of which ending at Brentford, he wintered there, and waited again for the spring. After which, he says, "we resolved to undertake once more a pilgrimage of a greater extent than any we had done before; and the vernal season which then began to attire the country in all its bravery, did mightily conduce to quicken our resolutions in steering our course about the maritime coasts of our native soil. Hereupon equipping ourselves, like provident pilgrims, with all things requisite for so great a journey, and having some friends which accompanied us on our way, our first remove was into the county of Essex." His friends went with him as far as Rumford, a distance of ten miles, where they halted for the night. In the morning, when he discerned "the first blushes upon Aurora's cheeks," he rose to pursue his pilgrimage. Having to bid his friends farewell, they "embraced each other with passionate expressions of kindness," and, with a gale of good wishes, he was speeded forward on his journey.

Mr. Brome some time afterwards stayed a few days at York, and, being hospitably entertained, passed a high eulogium upon the generous character of the gentry "dispersed throughout those northern climates." Of the wonders which he met with on his way, one example will suffice. In the neighbourhood of Darlington he found—

"Three Pits of Water, of a wonderful depth, called by the common people *Hell Kettles*, concerning which *Sir Richard Baker* in his *Chronicle* gives the following Account:—That in the 24th year of King *Henry* the Second the Earth in this place lifted up itself in the manner of a high Tower, and so remained immoveable from morning until



evening, and then fell with so horrible a noise that it affrighted all the Inhabitants thereabouts, and the Earth swallowing it up, made there a deep Pit, which is to be seen to this day. That these Pits have Passages under Ground was first experimented, they say, by Bishop *Tunstall*, who, to satisfy his curiosity herein, marked a Goose, and let her down into them, which very Goose he found afterwards on the River *Tees*."

The account of the journey is full of marvels of this kind. He found the inhabitants of Northumberland "fierce, hardy, and long-lived." In proof of the latter peculiarity, he mentions the case of one Mr. Macklain, parson of Lesbury, who died at the age of 116 years, two years before which, though for forty years previously he could not read without spectacles, he renewed his sight, so that he could read the smallest print, and his hair having fallen off, it grew again, just like a child's. He describes the Highlanders as being very like the "wild Irish," and said that when they went to war with their enemies, their weapons were still bows and arrows. The Lowlanders were more civilized, but as yet retained some barbarous customs. He speaks of wolves infesting the country, and being very mischievous, and of foxes also. To prevent the latter from destroying poultry, the inhabitants in every house in Glenmoor bred up a young fox, then killed it, and, mixing it with other food, gave it to the fowls to eat. After this, no wild fox would touch a fowl for a space of almost two months! He reached as far as Annandale, after which he returned towards his "native soil." In Devonshire he found the roads so rocky and narrow, that it was not possible for the farmers to use waggons; they therefore gathered in their corn upon horseback. He reached the boundaries of Cornwall, into which he desired to travel, but the "unseasonableness of the weather" deterred him.

The book of "Three Years' Travels" appears to have been well received, though it contained only the most meagre account of the places visited. Its favourable reception shows how little could have been known by the inhabitants of Britain of the country which they inhabited.

Another work, "A Tour through the whole Island of Great Britain," in four volumes, ascribed to Daniel De Foe, appears to have become a favourite hand-book at a later date. The "seventh edition, with very great additions, improvements, and corrections," is before us. In the third edition, 1742, the author apologized to his readers, saying that he had "discovered many very material omissions." In fact, he had omitted from his "Tour through Great Britain," the whole of the

county of *Hertford*, excepting *St. Alban's* and one or two villages, as also the isles of *Wight*, *Portland*, *Guernsey*, *Jersey*, *Alderney*, and *Sark*, together with the isle of *Man* and the *Scots' Isles*. He also discovered that he had directed his Tour in such a manner as to pass wholly by several of the best towns and most remarkable places. There are, unfortunately, very few references to the state of the roads in this work. "In July, 1739," says the author, "a very good design was begun to be put in execution on *Shooter's Hill* (near London), a number of hands being employ'd in cutting a new road, wide enough for three carriages to pass abreast on the eastern descent of the hill,



THE NARROW WAY.\*

which was formerly so narrow that it was impossible for a passenger, if way-laid, to escape falling into a ruffian's hands, and which gave occasion to many robberies being committed there."

There is an account of an equestrian journey from Glasgow to London in the year 1749, in which the travellers met with no turnpike road until within 110 miles of the great city. Up to that point they travelled on a narrow causeway, with an unmade soft road on each side of it. They met with gangs of pack-horses, following each other in a

\* From Gambado's "Art of Horsemanship," 1788; a skit upon the narrowness of the roads.

line, conducted by an old leader, by the side of whose head there hung a tinkling bell. Upon meeting with these gangs the travellers were obliged to quit the road, and allow them to pass, as the causeway did not afford room enough.

A more complete view of the chief roads of the country for a period of nearly fifty years is afforded by the several editions of Ogilby's "*Itinerarium Angliæ*," 1675 to 1717, in which descriptions of the roads are given not only in letter-press, but by a series of elaborate diagrams (see Plate, p. 152). We must remember, however, when reading these descriptions, that the excellent M'Adamized and paved roads of the present day were then entirely unknown, and those which Mr. Ogilby describes as "good" must have been vastly inferior to the ordinary roads of the present time. The following are a few of his descriptions of the "quality of the way:"—

*London to Berwick.*—"One of the most frequented Roads of the kingdom, though none of the best Way, for after the first 20 or 30 Mile 'tis generally so bad, that there was a certain late Imposition upon Travellers, during 3 years, at Stilton and a place or two on this side of about a Penny for a Horse, &c., towards the Repairs of this part of it."

*London to Hythe.*—"Affording a reasonable Road to *Farningham*, but less commendable to *Hith*, being generally a rough, hard, narrow Way, and not much frequented."

*London to Holyhead.*—"The first 30 miles very good Way, thence 'tis indifferent through *Buckinghamshire* and *Northamptonshire*," &c.

*London to Newhaven.*—"Not commendable for its goodness, either as to the quality of the way, or otherwise."

*London to Rye.*—"Not altogether commendable, especially beyond *Tunbridge*."

*London to Bath and Wells.*—"Affording an indifferent good Road to *Chipenham*, thence to *Bath* is something rough and stony, and after to *Wells* over *Mendip Down*, a bad Winter Road."

*London to Derby.*—"In general a bad deep Way."

*London to Montgomery.*—"Affording a good Road to *Wickham*, not so pleasant to 4 *Shirestone*, and from thence very bad to *Worcester*, thence to *Ludlow* indifferent, and better to *Bishop's Castle*, after to *Montgomery*, bad again."

*Bristol to Weymouth.*—"A great part of it is a bad deep Way."

*London to St. Neots.*—"The first part of the Road being reasonably good Way, but *Baldock Lane* is notorious for its badness, neither is the succeeding part of it at all commendable."

*Cambridge to Coventry.*—"In general a deep and unpleasant Way."

*Exeter to Barnstaple.*—"A rough, hard Way."

*Hereford to Leicester.*—"Affording but a hard Way to *Worcester*, thence to *Coventry* indifferent, and hard again to *Leicester*."

*King's Lynn to Norwich.*—"Affording a very good Way (much open and heathy), as indeed the whole county generally does, which makes it reported that King James once pleasantly said, *He would have all Norfolk cut out into Roads, to supply the rest of the kingdom.*"

The state of the roads was such that accidents were of very frequent occurrence; and travellers, weary of the difficulties of their journeys,



took their way over private grounds, and frequently committed trespasses which led to litigation. We find it estimated that the amount of fines for trespasses in a certain district exceeded the probable cost of making a road which would render such trespasses unnecessary. These facts are sufficiently evidenced by the preambles of the Turnpike Acts.

In Ogilby's work we find that Beacons were set up to warn travellers from dangerous places:—"You pass by *Stanway*, and by the Beacon over the heath." "The way being moorish ground, then at 161'6, by a Beacon on the right." "Whence through an Arable at 89'3, passing by a Beacon on the Right 2 Furlongs."

It must be remembered that Mr. Ogilby's book was not merely for perusal. It was, in fact, a practical Guide to the Roads, as "*Bradshaw*" is a guide to the iron roads of the present time. A frequent encouragement held out to travellers in their hand-book was, that when they reached their various stages they would be rewarded by "good entertainment." Sometimes they were told that if they waited for the ebb of the tide, they might quit the hard and rugged roads, and find a pleasant way across the sands. One of the most remarkable features of the old hand-book is the frequency with which *gallows* and *gibbets* were referred to as road marks. Here are a few instances:—

"By the Gallows and three Windmills Enter the Suburbs of *York*."

"Leaving the forementioned Suburbs (*Durham*), a small Ascent, passing between the Gallows and *Crokehill*."

"You pass through *Hare Street*, &c., and at 13'4 part of *Epping Forest*, with a Gallows to the Left."

"You pass by *Pen-menis Hall*, and at 25'4 *Hilldraught Mill*, both on the Left, and ascend a small Hill with a Gibbet on the Right."

"At the end of the city (*Wells*) you cross a Brook, and pass by the Gallows."

"At 2'3 leaving the acute way on the Right to *Towting*, *Ewel*, &c., just at the Gallows, or Place of Execution of Malefactors, Convicted at *Southwark*. At 8'5 you pass by a Gallows on the Left, and at 10'2 enter *Croyden*."

"A small Rill with a Bridge over it called *Felbridge*, separating it from *Surrey*, whence by the Gallows you are conveyed to *East Grinstead*."

"Leaving *Peterborough* you pass the Gallows on the Left."

"You leave *Frampton*, *Wilberton*, and *Sherbeck*, all on the Right, and by a Gibbet on the Left, over a Stone Bridge."

"Leaving *Nottingham* you ascend an Hill, and pass by a Gallows."

"From *Bristol*, through *St. John's Gate*, and over *Froom Bridge*, you go up a steep ascent, leaving the Gallows on your Right."

"You cross the River *Saint*, leaving the Gallows on the Left, and enter *Caernarvon*."

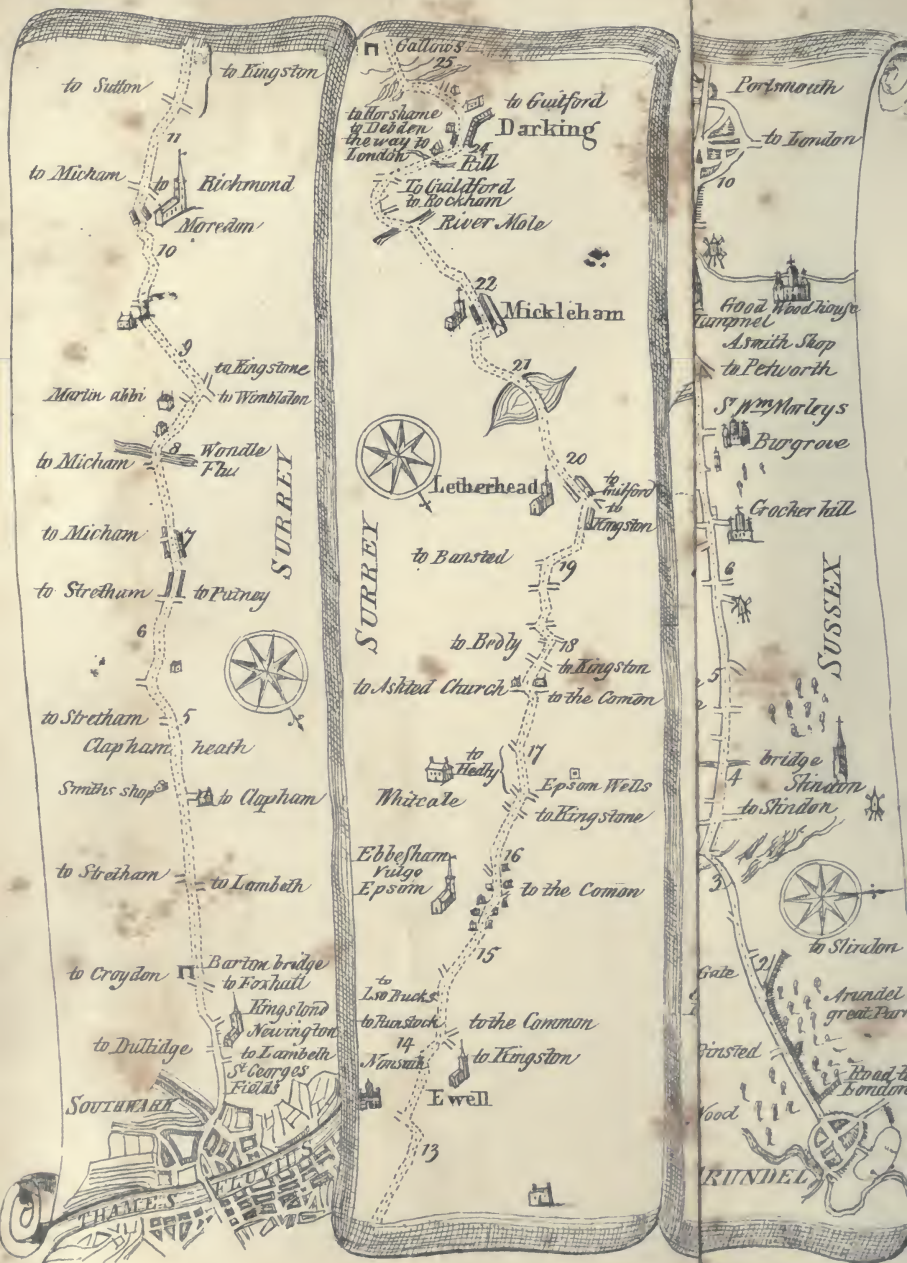
These hideous instruments of death standing by the highway no doubt awoke terror in the breast of the traveller. Meeting only a few persons upon the road, he saluted and passed them with suspicion, and feared every one he met as one who might be a robber or a murderer. On the road from London to East Grinstead, a distance of 26 miles, there were no less than three of those unsightly contrivances upon the sides of the highway—to say nothing of the gibbets erected in by-lanes and secluded places along the roads, in neighbourhoods where crimes had been committed, and the number of “Hangman’s Lanes” that travellers met with on the way. In Bewick’s works upon Birds and Quadrupeds, whenever that eminent naturalist and artist introduced an illustration of English scenery, a gibbet was almost certain to be included as one of the characteristics of the “picturesque.”

Mr. Ogilby’s work, when it first appeared, was a large folio, as thick and large as a family Bible. Being too wieldy to be portable, it was kept at inns and posting-houses to be consulted by travellers, who copied into their pocket-books the directions for the route. The study of the particulars of a journey was often a long and serious affair before starting; and when the time came for departure, friends parted with tearful anxiety. The unportable dimensions of Ogilby’s Guide led to the publication in subsequent years of quarto editions; then followed numerous “Books of Roads,” “Travellers’ Guides,” “Travellers’ Companions,” “New Travellers’ Companions,” “Travellers’ Assistants,” “Itineraries,” etc. For the most part these were plagiarisms of Ogilby’s elaborate work, and some of them continued to reproduce his descriptions a hundred years afterwards without any alterations; so that travellers, with hard roads to travel upon, and imperfect books to guide them, must have found endless inconveniences by the way.

We will give a fac-simile of Ogilby’s Diagram of the Road from London to Arundel, and the explanatory letter-press; and will then, after a few other particulars respecting the roads, pass on to consider the modes of travelling over these rude and imperfect public ways. As this description of road-book has been entirely superseded, the flight of years will render such a memorial of the past increasingly interesting.







FAC-SIMILE of Ogilby's Map of the Road from the Main Roads, Cross Roads, Bridges, Turnings, Churches, Beadew Public Conveyances, and when Travellers generally journed upon Gallows, Gibbets, etc., of which two appear upon the road to Ar parts that were enclosed.

THE ROAD FROM  
LONDON to ARUNDEL,  
In SUSSEX.

---

1. THE Point of *Bearing S.W.* by S.
2. The direct *Horizontal Distance* 49 M.
3. The vulgar *Computation* 46 M.
4. The *Dimensuration* 55'4 M.

From LONDON,

	Comp.		Measure.			Comp.		Measure.	
to Towing	05	05	06'7	06'7	to Stonefleet	05	25	05'5	30'0
<i>Ewell</i>	06	11	07'1	14'0	Billinghurst	10	35	11'3	41'3
Letherhead	05	16	05'5	19'5	Amberley	08	43	09'7	51'2
<i>Darking</i>	04	20	04'6	24'3	<i>Arunel</i>	03	46	04'2	55'4

With the continuation from *Arunel* to CHICHESTER, thus :

From <i>Arunel</i>	Comp.	Measure.
to CHICHESTER,	08	10'4.

*Middlesex*, *Surrey*, and *Sussex* include the whole Road, and the *Thames*, *Mole*, *Oke*, *Arun*, and *Lavant* are the principal Rivers past over, affording an indifferent Way, but good Entertainment.

The Road We exhibit is by *Darking*, yet some will pass by *Horsham*, 3 or 4 miles to the Left, and others travel the more frequented Way on the Left to *Darking* by *Stretham*, *Micham*, and *Sutton*.

Thus much in general, the Turnings to be avoided being these that follow :

At 1'7 the Right to <i>Kingston</i> .	At 32'7 the Left along
2'3 the Left to <i>Croydon</i> .	<i>Honey-lane</i> , uniting
8'4 the Right forward to	again.
<i>Kingston</i> .	33'3 the Right to <i>Guil-</i>
13'2 the Left to <i>Nonsuch</i> .	<i>ford</i> .
14'1 the Right to the	34'7 the Left to <i>Horsham</i> .
Common.	35'2 the Left by <i>Screw-</i>
15'5 the Right.	<i>bridge</i> , uniting again.
15'7 the Left.	45'4 the Right to <i>Pul-</i>
14 in <i>Letherhead</i> the	<i>borow</i> .
Right to <i>Guilford</i> .	51'4 the Left.
24'3 in <i>Darking</i> the Right	53'5 the Right to
to <i>Guilford</i> .	CHICHESTER.

Counties past through.  
Rivers crost over.  
The quality of the way.

Acute turn-ings to be avoided.

LONDON,  
S.W. b. S.

Newington, 1'5.

Towtingbeck, 6'4  
Towting-gravenny, 7 M.  
Moredon, 10'2.

Ewel, 14 M.  
Ebesham, 15'4.

Letherhead,  
19'5 S.

Mickleham,  
21'5.

Darkin, 24'1.

Store-street, 30  
M.

Oke-wood Bridg,  
30'7.

Rohook, 35 M.  
[37'5 S. by W.]

From the Standard in *Cornhil*, LONDON-bridg and through *Southwark*, as in the Description of LONDON, a small interval brings you at 1'4 to *Newington*, of 2 Furlongs Extent, at the End of which the acute Way on the Right to *Kingston*, *Guildford* and *Portsmouth* branches out, and another at the Gallows to *Stretham* and thence to *Lewes* and *Newhaven* by *Croydon*, or to *Arundel* by *Horsham* or *Darking*.

Hence over *Clapham*-heath you come at 6'4 to *Towting-beck*, a small Village, at 7 Miles pass through *Towting-gravenny*, a Village of 2 Furlongs, whence an indirect way brings you at 10'2 to *Moredon*, another little Village, and leaving *Non-such* on your Left, a stately House of the King's, Built by *H. 8th*, you pass through *Ewel* at 14 Miles, a small Market-Town of about 2 Furlongs long; and at 15'4 through part of *Ebesham*, *vulgo* *Epsum*, a Town much frequented for its Medicinal Waters, the Well lying 3 Furlongs on the right at 16'6. But proceeding, at 19'3 you enter *Letherhead*, of 3 Furlongs length, affording good Entertainment; whence bearing to the Left, and at 21'5 passing through *Mickleham*, a Village of 2 Furlongs, a Mile farther you cross the River *Mole*, near the place where it has a subterranean Passage for a Mile or two, and enter *Darking*, *alias* *Darkin*, at 24'1, situate on a Branch of the *Mole*, a large Town of good Reception, with a Noted Market on *Thursdays*, especially for Fowl.

From *Darkin* over a Hill of 3 Furlongs height, succeeded by another Ascent, and woody on each side, you come to *Cold-harbor* Hill, ascending for 3 Furlongs, but descending a Mile, and conveying you at 30 Miles to *Store-street*, a scattering Village whence a Cause-way of 2 Miles, part of the old *Roman Port-way* call'd *Stany-street* (near which is *Okeley* or *Aclea*, where King *Ethelwald*, Son of King *Egbert*, obtained an eminent Victory over the *Danes*), conveys you by a small Descent at 30'7 to *Oke-wood* Bridg, and ascending *Oke-wood* Hill, enter *Sussex* at 32'7, the forward Way leading through *Honey-Lane*, to avoid the Dirty-nefs of which, you bear to the Right, and at 34'7 the forward Way on the Left leads to *Horsham*, about 3 Miles distant, a good Borough and Market-Town, so called from *Horsa*, a Brother of *Hengist*; Govern'd by 2 Bayliffs, Electing Parliament Men, and is the place where the County Gaol is kept; omitting which you come next to *Rohook* a small Village, where you have again a different Way on the Left.



Hence through a small Wood, at 36'4 you cross the River *Arun*, leaving *Detsum* Place on the Left, and uniting the last mention'd Way at 37'5, whence a direct Road through *Bucknam-Corn*, a small Village, leads you at 41'1 into *Billingherst* of 3 Furlongs and good Accommodation; thence through a small Village called *Mulsey*, and over New-Bridge and *Pulborow* Common, you descend for 3 Furlongs, pass over *Wickford* Bridge, and at 47'6 through *Wickenholt*, a small Village, and after by *Parham* Park, Sr. *Cecil Bishop's*, and the Place on the Left you come to *Parham*, a little Village; whence 3 successive Descents convey you at 51 miles into *Amberley*, a reasonable Thoroughfare of 3 Furlongs.

At 52'2 over *Houghton* Bridge you cross the River *Arun*, and 4 Furlongs farther pass through *Houghton* 2 Furlongs long, whence after an Ascent of 3 Furlongs you come to *Arundel* at 55'2 by the Way of *Marygate*, whence to the Bridge it extends 6 Furlongs; an antient Borough-Town, Seated on the N.W. of the River *Arun*, over which it has a fair wooden-Bridge where ships of 100 Tun may ride; is Govern'd by a Mayor, 12 Burgesses, a Steward, &c., has a great Market on *Thursdays*, and a small one for Provision on *Saturdays*, and 4 Fairs annually, the 3d of *May*, the 10th of *August*, the 14th of *September*, and the 6th of *December*; It enjoys a good Trade, several Ships being here built, as of late the *Society* and the *Mary*, &c. The Castle famous in the *Saxon* Times, and yet, as having the honour of an Earldom, entailed upon the Possessors thereof, now in the Noble Family of the *Howard*s, Earl of *Arundel* and Duke of *Norfolk*, is seated on the East of the Tame, and reputed a Mile in circumference.

From *Arundel* through the old *Fish Market* and *Watergate*; by *Hookwood* on the Left, and *Arundel* great Park on the Right (the little one lying between *Marygate* and the Castle) at 2'7. You descend *Amsford* Hill of 4 Furlongs, and at 4 miles over *Mackrels* Bridge, and after by *Half-way Tree*, passing through *Crockerhil* at 6'5, a small Village; Thence by *Boxley* Church at 7 Miles, and Sr. *William Morley's* House on the Right and *Tangmere* on the Left, at 8'2. You pass through *Mandline*, a scattering Village, and by *Hampnet* Church on the Right, and the Place on the Left, you cross the *Lavant*, at 9'6 enter the suburbs of **CHICHESTER**, seated in a Plain and on the River

*Bucknam-Corn*,  
39'4.  
*Billingherst*,  
41'3.

*Wickenholt*,  
47'6.

*Amberley*, 51'2.

*Houghton*, 52'6.

*Arundel*, 55'4.

*Arundel*, W. by S.

[3'2 W.]  
*Crockerhil*, 6'5.

**CHICHESTER**  
10'4.

*Lavant* near its confluence with the Sea, a City indifferent large, numbering 4 Parish Churches within the Walls, besides the Cathedral, and One without *East Gate*, and another without *West Gate*, both Demolisht in the late Wars, hath 4 Gates respecting the 4 Cardinal Points, to which the 4 principal Streets lead, and are called *East-street*, *West-street*, *North-street*, and *South-street*; Is Governed by a Mayor, Recorder, Aldermen, &c.; sends Burgesses to Parliament, hath 2 well-furnish'd Markets Weekly on *Wednesdays* and *Saturdays*, which are Noted to be the greatest for Fish in the County, and 5 Fairs annually, viz. 23rd of *April*, *Whitsun Munday*, 25th of *July*, *Michaelmas Day*, and 9 Days after, call'd *Slow Fair*.

Backward turn-  
ings to be avoid-  
ed.

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. At the End of <i>Mand-line</i> the Left to <i>Petworth</i>.</li> <li>2. In <i>Amberley</i> the Left.</li> <li>3. A Furl. beyond <i>Darling</i>, the Right to <i>LONDON</i> by <i>Stretbam</i>.</li> </ol> | <ol style="list-style-type: none"> <li>4. In <i>Letherhead</i> the Left to <i>Kingston</i>.</li> <li>5. At the Entring <i>Ewel</i> the Left to <i>Kingston</i>.</li> <li>6. At the Mid-way between <i>Mordan</i> and <i>Towting</i>, the Left to <i>Wimbleton</i>.</li> </ol> |
|---|---|

A great number of local and general Acts for the improvement of roads were passed in the reigns of the Georges. Those Acts must have amounted to some hundreds in number; and yet such had been the condition of the country before improvements were energetically taken in hand, and so great was the wear and tear of roads by the increase of traffic, that the highways were still in a very imperfect state. Those in the neighbourhood of London were so cut up by excessive use, that they were inferior to the roads of remoter districts. Mr. Waterhouse, whose head-quarters were at the Swan with Two Necks, kept 400 horses; those worked within 50 miles of London, which on the average cost £30 each, lasted about four years; those at a greater distance, costing £15 each, six years. He used to say that eight horses on the more distant roads would perform as many miles as ten nearer London; that three horses would draw the mail on Mr. Telford's roads in North Wales with as much ease as four on the road from London to Dunchurch. Mr. Horne, of Charing Cross, also kept 400 horses: he bought 150 every year; those worked near London lasted but three years; those at a greater distance double the

time, in consequence of their work being lighter, their food better, and their lodging more airy. Mr. Eames, of the "White Horse," Fetter Lane, kept about 300 horses: he found them to last three years in post-coaches, and as long again at a distance from London. He said that his drivers represented the "crossing backwards and forwards through the gravel, heaped sometimes in the middle of the roads near London, as 'tearing the horses' hearts out.'" This was the state of the metropolitan highways prior to the introduction of Telford's and M'Adam's improvements.

Such being the condition of the main roads, what must have been the state of those shorter and minor ways which intersected remote localities, leading from farms to markets, and from village to village? In order to arrive at Guildford from Petworth, in Sussex, travellers were obliged to make for the nearest point of the road leading from Portsmouth to London. This was a work of so much difficulty as to occupy the whole day, and the Duke of Somerset had a house at Guildford, which was used as a place of rest by his family travelling to London. A letter from a servant of the Duke's, dated from London, and addressed to another at Petworth, states that the Duke intended to set out for Petworth on a certain day, and directs that "the keepers and persons who knew the holes and the sloughs must come to meet his Grace with lanthorns and long poles to help him on his way."\* In December, 1703, Charles, King of Spain, slept at Petworth on his way from Portsmouth to Windsor, and Prince George of Denmark went to meet him there. The following account of this little journey, in which a King and a Prince were the distinguished travellers, was related by one of the attendants:—"We set out at six o'clock in the morning to go for Petworth, and did not get out of the coaches (save only when we were overturned or stuck fast in the mire) till we arrived at our journey's end. 'Twas hard service for the Prince to sit fourteen hours in the coach that day without eating anything, and passing through the worst ways that I ever saw in my life: we were thrown but once indeed in going, but both our coach, which was the leading, and his highness's body coach, would have suffered very often, *if the nimble boors of Sussex had not frequently poised it or supported it with their shoulders from Godalming almost to Petworth*; and the nearer we approached the Duke's house the more inaccessible it seemed to be. The last *nine miles* of the way cost us *six hours'* time

\* J. H. Markland, Esq., in "Archæologia."



to conquer them, and indeed we had never done it if our good master had not several times lent his pair of horses out of his own coach, whereby we were enabled to trace out the way for him. They made us believe that the several grounds we crost, and his Grace's park, would alleviate the fatigue, but I protest I could hardly perceive any difference between them and the common roads!" We have already shown (p. 95) that in 1767 Mr. Young "found the lanes so narrow that not a mouse could pass a carriage, and ruts of an incredible depth; waggons stuck fast until a line of them were in the same predicament, and required twenty or thirty horses to be lashed together to each to draw them out one by one." He had sometimes to alight from his chaise, and get the rustics to assist him to lift it over a hedge before he could proceed. A much later testimony\* speaks of the by-roads as "a disgrace to the age and country." "The expenditure on good roads," says this authority, "may not appear to a vestry of farmers to return so direct a profit as that laid out in ploughing and sowing, but its profits are equally certain, since it must cause a very considerable diminution in the wear and tear of their carts and waggons, and the number of horses in their teams." The editor of the "Farmers' Journal," 1821, stated that when he passed over the road from Grantham to Stamford, thirty years ago (1791), the road was rut-quartered in such a manner that a saddle-horse could scarcely set a foot down with safety, or find a path. By Mr. M'Adam's improvements, that road in 1821 was made as level as the drive in Hyde Park.

From the facts already given, it might have been expected that every inhabitant in the kingdom would have rejoiced to witness improvements, and would gladly have contributed to their accomplishment; but we shall see that the improvers of roads, the introducers of coaches, and the promoters of canals, have in succession had severe hostilities to contend with.

About the year 1728 riots broke out in various parts of the kingdom in which armed bodies of men assembled and destroyed the turnpikes that had recently been erected. Nor did they confine their acts of destruction to turnpike houses and toll-gates; they demolished the locks, sluices, and floodgates of rivers which had been rendered navigable, and upon which tolls were levied. They could see no advantage in improvements; they had been accustomed to slow move-

\* "Quarterly Review," 1832.

ments and to heavy joltings all their lives, and were quite contented to go on in their old way at their accustomed pace, and therefore they felt the exaction of tolls to be an oppression. It was found necessary to pass a special law to punish turnpike rioters. In the year 1736 turnpike riots again took place, and one Reynolds was hanged at Tyburn as a ringleader. He was cut down too soon by the hangman, and, while being placed in the coffin, he revived, and struggled to escape, upon which the mob rescued him, and carried him off to a house, where, however, he died. Other turnpike riots occurred in 1749, when a great number of Somersetshire people demolished the turnpike near Bedminster, on the Ashton road. About the same time riots broke out in Gloucestershire; men with their faces blacked destroyed the gate and house at Don John's Cross, about a mile from Bristol; they bored holes in the large posts, and blew them up with gunpowder. Cross-bars and posts were again erected, and chains put across the roads; men were hired to resist the toll-takers, and the Commissioners, about a dozen in a body, took it by turns to stand at the gates and oblige travellers to pay toll. Several drovers, however, going to a neighbouring fair with cattle, with the assistance of the mob, forced their way. A few days afterwards the Somersetshire people demolished the works which were put up for the re-erection of the turnpike on the Ashton road. When the gate was completed it was found necessary to guard it with a number of sailors, armed with muskets, pistols, and cutlasses; yet the mob succeeded a third time in destroying the gate. They also destroyed the gates on the Bath and Pensford roads. The "Rebecca riots" in Wales, in 1842-3, are the latest, and we trust the final, instances of a mistaken populace rising against works of improvement, of which the humblest classes in the state are generally the first to find the benefit.

No sooner had agriculturists of the counties surrounding London discovered the improved facilities of communication upon turnpike roads, than they petitioned against the extension of them into the remoter parts of the kingdom, alleging that corn and hay would be sent to the London markets from the cheaper districts, and that this would have the effect of ruining them! Here was a new phase of feeling. Having tasted of the benefits of improvement, the knowing Southerners wished to monopolize it to themselves!

Having described the early roads, we have now to speak of the modes of travelling adopted by our ancestors, and of the early use of

private and public carriages. To the commencement of the eighteenth century, a very large proportion of the traffic of the country was carried on by means of pack-horses. The introduction of waggons, and coaches was regarded in their time as an innovation, and, as with the railways—indeed everything of a progressive nature—the most serious evils were predicted to result from the adoption of them. Harrison describes the horses as being “high, although not commonly of such huge greatness as in other places,” “yet if you respect the easiness of their pace, it is hard to say where their like may be had.” “Such as are kept for burden will carry four hundred weight commonlie, without anie hurt or hinderance.”

For mutual protection, for company, and for various conveniences upon their journey, these horses travelled in gangs of forty or fifty; they formed a single line, and were so well broke to their duty, that each horse knew and kept his place in the rank with the utmost regularity. The leading horse carried a bell, or pair of bells, suspended to his head-gear, and the tinkling of those bells guided the horses in the dark, or in the turnings of narrow lanes, and warned passengers on the road of their approach, so that they might move aside and allow them to pass. If the journey was unusually long, the old and weary horses lagged behind; yet they never broke the order of their march, but pushed on to their utmost strength, and many an old “pack” died from the exertions made to keep pace with his companions.

The loads carried by a gang of pack-horses were commonly of a most medley character: bags of wool, sacks of meal and hops, baskets of geese and poultry, the carcasses of animals, barrels of butter and baskets of eggs, fruit, vegetables, fish, and so on in endless variety. The method of loading the horses required considerable skill, and, even when well performed, the ups and downs of the journey demanded constant attention, to prevent the burden from being scattered on the road. The circuitous and hilly nature of many of our early roads arose from the fact that they were formed upon the tracks of the pack-horses, which found little difficulty in crossing hills, and frequently made a circuitous route to avoid low and marshy ground.

Royal and noble personages when they journeyed were attended by a long retinue of followers, all on horseback. The men were booted, belted, spurred, and armed, and the women were strapped and



hooded, and some of the horses of the train bore a provision of straps, saddles, pillions, buckles, cloths, and other essentials, in case of accidents by the way. In 1582, the Earl of Leicester, giving instructions for an intended journey, wrote: "I think my company will be twenty gentlemen and twenty yeomen, besides their men and my housekeepers. I think to set forwards about the 11th of September, from Wingfield to Leicester, to my bed, and to make but four days' journey to London."\* When the wife of the last Earl of Cumberland rode from London to Lonsdesborough, in 1640, she had thirty-two horses in her train, and the journey occupied eleven days.



PILLION-RIDING.

In like manner, the commoners rode in company whenever practicable.

Friends setting out from the same town, or travellers becoming acquainted upon the road, joined in parties, and gave confidence and cheer to each other on their way. A solitary journey in those early days must, for reasons sufficiently obvious, have been a matter of grave anxiety. "The inexperienced passenger must have needed some courage in his journeys across the semi-deserts of uncultivated England. But soon he is in a lane some four feet



PILLION AND PANNIER-RIDING.†

wide, sometimes floundering in the mud, at other times slipping upon a

\*Lodge's Illustrations

† Gambado's "Art of Horsemanship." London, 1791.

paved causeway, with a thick sludge on either side of the narrow track. In the hills of Derbyshire have we ridden the sure-footed pony of the country down these winding roads, shut out from the wide prospect around us by overhanging hedges, a privation which the pack-horse traveller little cared for. Not only in Derbyshire, in the days before men sought the picturesque, were such roads travelled over, but in the very thickest of our metropolitan suburb.”\* Hagbush Lane, once well known in the neighbourhood of Isledon,† but which disappeared upon the construction of the great New North Road, was one of the ancient bridle-ways to and from London and the North of England. It is thus alluded to by William Hone:—“The lane is so narrow as only to admit convenient passage for a man on horseback. This was the general width of the road throughout, and the usual width of all the roads made in ancient times. They did not travel in carriages, or carry their goods in carts, as we do, but rode on horseback, and conveyed their wares or merchandize in pack-saddles or packages on horses’ backs. They likewise conveyed their money in the same way. In an objection raised in the reign of Queen Elizabeth to a clause in the Hue and Cry Bill, then passing through Parliament, it was urged, regarding some travellers who had been robbed in open day within the hundred of Bayntesh, in the county of Berks, that ‘they were clothiers, and yet travailed not withe the great trope of clothiers; they also carried their money openlye in wallets upon their saddles.’ The customary width of their roads was either four feet or eight feet. Some parts of Hagbush Lane are much lower than the meadows on each side; and this defect is common to parts of every ancient way.”

In the “Correspondence of Sir George Radcliffe,” we have many proofs of the serious inconveniences that attended travellers in the early part of the seventeenth century. The following is a curious instance of the simplicity of manners which prevailed at that period. The editor observes:—“At this time, 1609, the communication between the north of England and the Universities was kept up by carriers who pursued their tedious but uniform route with whole trains of pack-horses. To their care were consigned not only the packages, but frequently the persons of young scholars. It was through their medium, also, that epistolary correspondence was managed, and as they always visited London, a letter could scarcely be exchanged between Yorkshire and Oxford in less time than a month!”

\* Knight’s “Land we Live In.”

† Islington.

That the ancient Britons were acquainted with wheeled carriages is evident from the use they made of war chariots. Though dignified by the name of chariots, those vehicles must have been rudely formed of massive wood, with wheels consisting of merely round pieces of the trunks of trees. It is probable that as they knew the use of these chariots, they would also construct carts for employment in the little husbandry which they

pursued. The annexed illustration represents a cart in use until a recent date in some parts of Wales, and which is supposed to be a type of the ancient British construction.



BRITISH CART.

There was a description of carriage in use among the Saxons, the representations of which have more the appearance of a bed than a carriage. A kind of hammock appears to have been slung upon a frame mounted on wheels. To what extent this was used, we have no evidence. Probably it was only for the conveyance of persons of great state, ladies, or invalids.

Before entering more fully upon the history of wheeled carriages, we may notice a mode of conveyance which was long used, especially by females of rank on occasions of ceremony, and by the sick. This was a *horse-litter*, in many respects like the sedan, but borne by horses and mules, instead of men. It was also employed in carrying the dead. Litters continued to be used in England even after the introduction of coaches,\* and they were sometimes borne by men, at others by horses or mules.

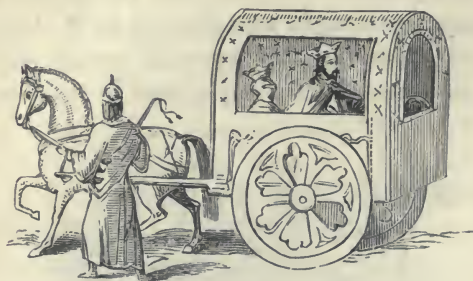
The oldest carriages used by the ladies in England were known under the now forgotten name of *whirlicotes*. When Richard II., towards the end of the fourteenth century, was obliged to fly before his rebellious subjects, he and all his followers were upon horseback; his mother only, who was an invalid, rode in a carriage.† The period when coaches were first introduced is a matter of uncertainty. Harrison speaks of the carriages of the nobility as “cartes,” and they were probably nothing more, though somewhat raised from the common

\* J. H. Markland, Esq., “Archæologia,” vol. xx.

† Beckman’s “History of Inventions.”



description by ornament :—" This furthermore is to be noted, that our princes and the nobilitie have their carriage commonlie made by cartes,



CARRIAGE OF KING JOHN.

wherby it commeth to passe, that when the Queen's Majestie doth remooove from anie one place to another, there are usuallie 400 care-warees, which amount to the summe of 2400 horses appointed out of the counties adjoining, whereby her

cariage is conveyed safelie unto the appointed place." The carriage of King John appears to have been of very simple construction. It was without springs, the body rested upon the axletree, and the wheels were to all appearance cut out of solid pieces of circular wood, carved ornamentally for the sake of lightness, and bound round with a thick wooden tire. The carriage of Elizabeth was mounted upon four wheels,



CARRIAGE OF QUEEN ELIZABETH.\*

without springs or hangings, but the wheels appear to have been made of spokes, bound together by a thick wooden rim.

Stowe records that, in 1605, long waggons for the conveyance of passengers and goods were in use between London, Canterbury, and other large towns. Anderson makes this also the period when coaches began to be in common use. But it is highly probable that long

\* From a curious old print, by Hofnagel, in the Palace of Nonsuch. Date 1582.

waggons were the first public vehicles communicating between distant places, and that stage-coaches were designed as an improvement upon them, for the conveyance of passengers and goods at a greater rate of speed for higher charges.



LONG WAGGON, ONE OF THE EARLIEST PUBLIC CONVEYANCES.

These "long waggons," or "machines," as they were variously called, were constructed to carry a large number of passengers; and of necessity travelled at a miserable pace. The "boots" of these vehicles



WAGGON-COACH.

projected at the sides, and were probably taken by "outside passengers," who paid a lower fare than the occupants of the covered interior. It is not an unreasonable conjecture that a guard rode with

the passengers in each boot, and that this kind of seat was originally intended for that purpose, as it gave the guard, who sat sideways, an opportunity of seeing all the points of the road. Some of these vehicles ran only in the long days of summer, when the duration of day-light enabled them to perform a day-journey. To accomplish the greatest possible distance within the day, the journey generally commenced at day-break in the morning. Soon after these long waggons came into use, the "waggon-coach" was introduced. This was a vehicle having a body like the ordinary stage-coach, with an enormous basket-like appendage behind. The baskets, or boots, were probably for the accommodation of third-class passengers, who were huddled together with all kinds of wares, the second-class occupying the top of the vehicle, and the first the inside.

When Mr. Edward Parker rode from Brownsholme to London, in 1663, he probably travelled in a vehicle of this kind. A letter, addressed by Mr. Parker to his father,\* is singularly interesting:—

"To my honoured Father, Edward Parker, esquire, at Brownsholme, these:—

"Leave this letter with ye Post Master, at Preston, Lanckashire, too bee sent as above directed.

"Honoured Father,

"My dutie premised, &c., I got to London on Saturday last, my journey was noe ways pleasant, being forced to ride in the boote all the waye, ye company yt came up with mee were persons of greate quality, as knights and ladyes. My journey's expence was 30s. This traval hath soe indisposed mee, yt I am resolved never to ride up againe in ye coach. I am extreemely hott and feverish, what this may tend too I know not, I have not as yet advised with any doctor. As for newes wee have onely this, yt ye Queene is very well recovered, but tis thought she is not with childe. Justice Hyde (who was one of ye Judges of ye Common Pleas) is now called to bee Lord Chiefe Justice. Doctor Hineckman, who was Bishop of Salisbury, is translated to London. Collonel Hutchinson, who was one of the regicides, is taken in this last plott; hee was apprehended at Newarke, and brought to London (by his Majesty's speciall command) upon Saturday last: wee had his company on some parte of the roade. Our forraigne newes is onely such as you have in ye country; ye Turke proceedes vigorously in Hungary. I desire yt all my manuscripts may bee sent up with speede. This is all, but yt I am your dutifull and obedient sonne,

"EDWARD PARKER.

"London, 3rd November, —63."

It will be observed that the company that travelled with Mr. Parker, being persons of great quality, did not ride with him in the boot. He evidently complains of his having had to do so as a hardship.

\* Printed in Mr. Markland's communication to the Archæological Society.



When the fast-running coaches commenced, the public conveyances appear to have gradually assumed a division into two classes: one travelling at the highest speed practicable for the conveyance of passengers; the other conveying heavy goods at a slow rate. Then commenced the stage-waggons with broad wheels, which they were compelled to use by Act of Parliament, to prevent the injury they would otherwise do to the roads; and in some instances these waggons, with wheels of a specified width, were privileged to travel at reduced tolls in consequence of the good effect of their wide wheels in crushing down and levelling the ruts made by other descriptions of vehicles.



STAGE-WAGGON.

The precise date of the introduction of stage-coaches into England is not known. Hired carriages existed as early as 1625; but the following copy of an advertisement from the "*Mercurius Politicus*" for Thursday, April 8th, 1658, is the earliest public notification of that mode of travelling: \*—

"AN ADVERTISEMENT.

"From the 26th day of April 1658 there will continue to go stage-coaches from the George Inn without Aldersgate, London, unto the several Cities and Towns, for the rates and at the times hereafter mentioned and declared.

"Every Monday, Wednesday, and Friday.

"To Salisbury in two days for *xxs.* To Blandford and Dorchester in two days and a half for *xxxs.* To Exmaster, Nunnington, and Exeter in four days *xl.* To Stamford in two days for *xxs.* To Newark in two days and a half for *xxvs.* To

\* "Notes and Queries."

Bawtrey in three days for XXXs. To Doncaster and Ferribridge for XXXvs. To York in four days for XLs.

"Mondays and Wednesdays to Ockinton and Plimouth for Ls. Every Monday to Helperby and Northallerton for XLvs. To Darneton Ferryhil for Ls. To Durham for LVs. To Newcastle for IIII., to Edinburgh for IVI. a peece, Mondays. Every Friday to Wakefield in four days for XLs."

The following copy of a bill twenty years later shows no improvement in the rate of travelling:—

**"YORK FOUR DAYES STAGE-COACH.**

"Begins on Monday the 18 of March 1678.

"All that are desirous to pass from London to York or return from York to London or any other Place on that Road; Let them repair to the Black Swan in Holborn in London and the Black Swan in Cony-Street in York.

"At both which places they may be received in a stage-coach every Monday, Wednesday, and Friday, which performs the whole journey in Four days (if God permit) and sets forth by Six in the Morning.

"And returns from York to Doncaster in the Forenoon, to Newark in a day and a half, to Stamford in Two days and from Stamford to London in Two days more.

"Performed by  $\left\{ \begin{array}{l} \text{HENRY MOULEN,} \\ \text{MARGARET GARDNER,} \\ \text{FRANCIS GARDNER.} \end{array} \right.$

Sixty years later, the following advertisement appeared in "The Daily Advertiser" of the 9th April, 1739:—

"The old standing constant Froom Flying Waggon in Three Days.

"Sets out with Goods and Passengers from Froom for London every Monday by One o'clock in the morning, and will be at the King's Arms Inn, Holborn, by Twelve o'clock at noon; from whence it will set out on Thursday morning by One o'clock for Amesbury, Shrewton, Chittern, Heytesbury, Warminster, Froom, and all other places adjacent, and will continue allowing each passenger fourteen pounds, and be at Froom on Saturday by Twelve at noon.

"JOSEPH CLAVEY."

On the 17th of April, 1767, the following advertisement also appeared in "Crutwell's Sherborne, Shaftesbury, and Dorchester Journal:—

"The Proprietors of the

**"FROME STAGE MACHINE,**

In order to make it more agreeable to their Friends in the West, have engaged to set out Post Chaises from the Christopher Inn in Wells every Sunday, Tuesday, and Thursday evenings, at Five o'clock, to stop at the George Inn, at Shepton Mallett, and set out from thence at a quarter past Six, to carry passengers and parcels to Frome, to be forwarded from thence to London in the One Day Flying Machine, which began on Sunday, April the 12th, 1767: Also

a Chaise from Frome every Tuesday, Thursday, and Saturday evenings, to Shepton and Wells as soon as the Coach arrives from London.

“Performed by

“R. MESSETER, at the Crown, at Thatcham,  
and

“J. HITCHCOCK, at the Catherine Wheel, Beckhampton.”

The conveyance of letters previous to the seventeenth century was chiefly confided to “postmasters,” whose chief business consisted of furnishing post-horses to such persons as were desirous of travelling expeditiously. As a matter of private speculation, however, postmasters undertook to forward extraordinary packets and dispatches on special occasions.

In the year 1635 Charles I. erected a letter-office for England and Scotland, but this extended only to a few of the principal roads. The times of carriage were uncertain, the postmasters being compelled to furnish horses at the lowest possible rates; but the establishment did not succeed.

At the time of the Commonwealth, however, an establishment was instituted in the year 1649 for the conveyance of letters *weekly* to all parts of the kingdom, and in 1656 it was still further improved by Cromwell. The Post-office, notwithstanding, continued long afterwards a very imperfect institution. The mails were sent by boys on horseback, or in two-wheeled carts made for the purpose, and instead of being the most expeditious and safest conveyance, the post gradually became the slowest in the kingdom; so much so, that whereas prior to the year 1784 the diligence between London and Bath accomplished the journey in *seventeen*



POST OF 1780.



hours, the post did not accomplish the same distance under *forty* hours; and on other roads the same rate of travelling showed about the same proportion.

This being the case, it occurred to Mr. John Palmer, manager of the Bath Theatre, that a great improvement might be effected, by contracting with the proprietors of stage-coaches for the carriage of the mail, binding them to perform the journey in a specified time, and to take a guard for protection.

Palmer's scheme was submitted to the Government. It met with violent opposition, but was zealously supported by Mr. Pitt, and was at length carried into operation. In the "*Gentleman's Magazine*," of the year 1784, we read the following notice:—

"*Monday, Aug. 2.*—Began a new plan for the conveyance of the Mail between London, Bath, and Bristol, by coaches constructed for that purpose. The coach which left London this evening at 8 o'clock arrived at Bristol the next morning before 11; and the coach that set out from Bristol at 4 o'clock in the afternoon, got into London before 8 o'clock next morning; and in this regular order the coaches have continued their course every day since."

This mode of conveying the mails, with occasional improvements, was in operation until the introduction of railways.\*

We have already hinted at the opposition which coaches met with at their introduction. Taylor, the "water poet," writing against them in 1623, says, "I thinke it is in the memory of many men when in the whole kingdome there was not one." "For in the yeare 1564 one William Boomen, a Dutchman, brought first the use of coaches hither, and the said Boomen was Queen Elizabeth's coachman. A coach was a strange monster in those dayes, and the sight of them put both horse and man to amazement: some said it was a great crab-shell brought out of China, and some imagined it to be one of the Pagan temples in which the cannibals adore the devil!" He added, "the mischiefs that have been done by them are not to be numbered, as breaking of legges and armes, overthrowing downe hills, over bridges, running over children, lame and old people." In 1672 an agitation was organized against them, in which certain "inne-holders, sadlers, cordwayners, sword-cutlers, watermen," and others of London, who fancied themselves injured by the innovation, joined. The movement does not appear, however, to have been attended by any great success, though it was sufficient to evidence the state of opinion of a part of the popu-

\* A complete History of the Post-office will be given in a future Section.

lation upon the subject.\* Among the most earnest advocates for the suppression of stage-coaches as a national evil, was one who styled himself "A Lover of his Country," and under that cognomen appealed to the public to aid him in his endeavours to put down obnoxious innovation. His arguments were, that coaches destroyed the breed of good horses; were prejudicial to the strength of the nation, by making men careless of horsemanship; that they hindered the breed of watermen, and thereby deprived the navy of good seamen; and that they lessened the king's revenues. The writer's estimate of the number of passengers conveyed at that time presents a striking contrast with the bustling characteristics of the present age:—

"York, Chester, and Exeter Stage Coaches, each of them with forty Horses a piece, carry eighteen Passengers a week from London to either of these places, and in like manner as many in return from these places to London; which comes in the whole to 1872 in the year." And again:—"Take the short stages within twenty or thirty miles of London, each coach with four Horses carries six Passengers a day, which are 36 in a week, 1872 a year; if these Coaches were supprest, can any man imagine these 1872 passengers could be carried by four Horses?" Then he contended, that by running coaches on the roads bordering upon the Thames, the watermen were ruined:—"These are they who carry all the Letters, little Bundles, and Passengers, which, before the Coaches set up, were carried by water." The revenue was injured, because, instead of people riding their journeys upon horseback, and having to alight and take drink at the roadside inns, they reclined lazily in the coaches, and went a long way without spending money. Coaches did injury to trade, because, "Before they were set up, Travellers rode on Horseback, and men had Boots, Spurs, Saddles, Bridles, Saddle-clothes, and good riding suits, Coats and Cloaks, Stockings and Hats; whereby the Wool and Leather of the Kingdom was consumed, and the poor people set at work by Carding, Combing, Spinning, Knitting, Weaving, Fulling; and your *Cloth-Workers, Drapers, Taylors, Saddlers, Tanners, Curriers, Shoe-Makers, Spurriers,† Lorryners, Felt-Makers*, had a good Employ," etc. etc. Then we get an evidence of the guarded mode of travelling in those days:—"Besides, it is a great hurt to the *Girdlers, Sword-Cutlers, Gun-Smiths, and Trunk-Makers*; most gentlemen, before they travelled in their Coaches, using to ride with Swords, Belts, Pistols, Holsters, Portmanteaus, and Hat-cases, etc. And if they were women that travelled, they used to have Safeguards and Hoods, Side-saddles and Pillions, with Strappings, Saddle or Pillion-cloths, which (for the most part) were either laced or embroidered." And then there were great moral evils attending the introduction of coaches:—"Passage to London being so easy, Gentlemen came to London oftener than they need, and their Ladies either with them, or having the

\* In the reign of Elizabeth, an attempt was made to enact a "Bill to restrain the excessive use of coaches within this realm of England," but it was rejected on the second reading. In 1659 the popular nickname for coaches among the Londoners was "Hell-carts."

† The absence of the mention of *stirrups* in this minute enumeration of equestrian equipments, leads to the inference that they had not been introduced at that time.

conveniences of these Coaches, quickly follow them. And when they are there they must be in the Mode, have all the new Fashions, buy all their Cloaths there, and go to Plays, Balls, and Treats, where they get such a habit of Jollity, and a love to Gayety and Pleasure, that nothing afterwards in the Country will serve them, if ever they should fix their minds to live there again"! All the inns except those at which the coaches stopped, and all the roads, save those over which the coaches travelled, were to be ruined:—"What must become of all the rest of the Inns on the Roads where these Coaches stay not? Take all the grand roads in *England*, as, *York, Exeter, Chester, &c.* There are about 500 Inns on each Road, and these Coaches do not call at fifteen or sixteen of them; then what can follow, but that the rest be undone, and their Landlords lose their rents?"

We have already (p. 116), seen the praise bestowed by Mr. Donaldson upon a team of six oxen, with one horse only as a leader; we may, therefore, be prepared to hear that he was also one who lamented the introduction of stage-coaches as a national evil:—

"When they consider," said he, "the unthrifty breed of horses so necessary to furnish the multiplicity of post-chaises, the mischievous increase of stage-coaches, the extravagant number of private ones \* \* \* the difficulty of resolving the cause of the evil must vanish, as they clearly see that the pastures which formerly fed such herds of beasts, and flocks of sheep, are now appropriated for the run of brood mares and colts. \* \* \* Some regulation should take place to keep within bounds the licentiousness of stage-coachmen, who, upon their present unrestrained liberty of loading their coaches as they please, counteract the many laws contrived for the preservation of the roads; besides, many lives are lost, and many valuable people rendered usefess to themselves and families by broken limbs; from the number of accidents which happen within the year from those overloaded carriages, and the number of idle profligates they crowd on the box, the roof, and behind, is a nuisance to every sober person who travels upon, or lives by, the road they pass, as their ears are sure to be assailed by the most vulgar and indecent jests."

Mr. Donaldson was evidently a sober-minded gentleman, who had little prescience of the wonderful things that were to come. He thought that the "gad-about" spirit of the age in which he lived was leading the community to ruin, and, as a check to such an evil tendency, he recommended that no minor should be permitted to keep or hire a horse without a "license" from his parents, guardians, or masters. Then, said he,

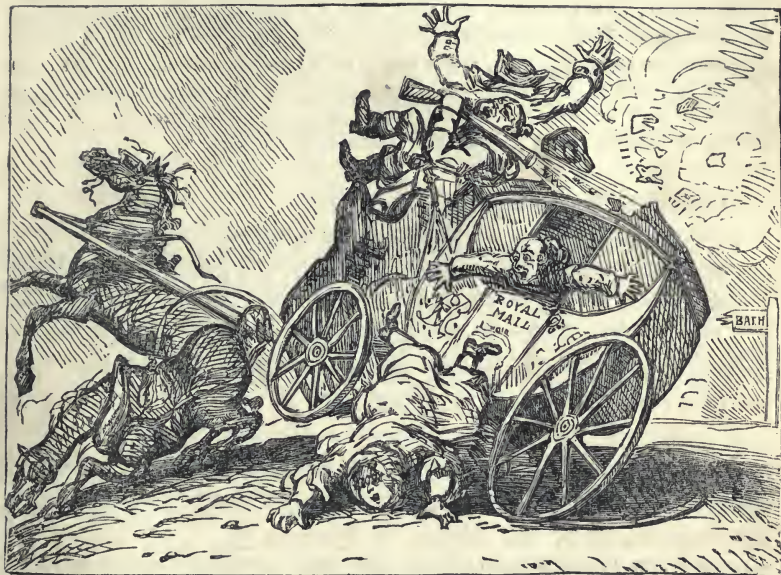
"Students at universities would attend much more to their learning, clerks and apprentices to their profession, or business; and the demand for horses being so much taken off, hay and corn would necessarily sink in their price, and draught cattle be maintained at a less expense. From this restriction, trade would derive most noble advantages; the application of our youth would give it credit; and lowering markets would quicken that ancient spirit (!) which gives perception and energy to commerce."

Such being the sentiment of Mr. Donaldson upon the evils of perambulations upon land, what must have been his view of the larger adventures by sea, which in his time had begun to exhibit a bolder



spirit? He denounced the discovery of the mariner's compass as "pernicious," and complained that it led people to "think more of ploughing the ocean than of ploughing the fields." Yet this Mr. Donaldson was no mean man in his time: he was the Secretary to the Government of Jamaica, and the letters, in which he breathed these wailings and forebodings, were "inscribed to the king." It probably had never occurred to him to ask how he could have held the proud office of "Secretary to the Government of Jamaica," but for the "per-

*BY AUTHORITY.*



*PERSONS AND PROPERTY PROTECTED.*

nicious discovery" which he lamented! There were thousands of men who entertained similar sentiments in his time.

Not only was the pen employed in condemnation of stage and mail-coaches, but the pencil of the caricaturist, which always affords an index of popular feeling, supported the common prejudice. The annexed engraving is a fac-simile of a caricature which appeared in 1785—mail-coaches having been instituted about the year 1784. The illustration is interesting, as throwing light upon one or two points essential to our history: there were no springs to the coaches—no back seat—the guard "furnished, paid, clothed, and armed at the

expense of the revenue," sat in front, and carried a brace of pistols and a blunderbuss!

There are frequent imputations in books of the seventeenth century against the integrity of innkeepers, who were suspected to connive at, if not to participate in, robberies committed in their houses and upon the roads:—

" Certes (says Harrison) I believe not that chapman or traveller in England is robbed by the waie without the knowledge of some of them, for when he commeth into the inne, and alighteth from his horse, the hostler forthwith is verie busie to take downe his budget or capcase in the yard from his saddle-bow, which he poiseth slilie in his hand to feele the weight thereof: or if he misse of this pitch, when the guest hath taken up his chamber, the chamberlaine that looketh to the making of the beds, will be sure to remove it from the place where the owner hath set it, as if it were to set it more convenientlie some where else, whereby he getteth an inkling whether it be monie or other short wares, and thereof giveth warning to such od guests as hant the house, and are of his confederacie, to the better undoing of many an honest yeoman as he journieth by the waie."\*

Another authority says:—

" It is as common a custom, as a cunning policie in thieves, to place chamberlains in such great inns where *cloathiers* and *graziers* do lye; and by their large bribes to infect others, who were not of their own preferring; who noting your purses when you draw them, they'l gripe your cloak-bags, and feel the weight, and so inform the master thieves of what they think, and not those alone, but the Host himself is oft as base as they, if it be left in charge with them all night; he to his roaring guests either gives item, or shews the purse itself, who spend liberally, in hope of a speedie recruit."†

In nothing has the anxious care of Parliament for the welfare of the country been so marked, as in the various legislative enactments and inquiries upon the subject of Roads. The most minute and curious points have from time to time been brought under consideration, and made the subjects of Parliamentary investigation:—the width of the roads—the growth of wayside trees and shrubs—ditching and draining—the prevention of temporary obstructions by markets, fairs, sports, strayed cattle, falling trees, floods, etc.—the growth of thistles and weeds on the roadsides—the setting up of direction and mile posts—the affixing of the names of towns and villages to their chief entrances—the prevention of windmills being

\* Introduction to Hollinshed.

† "A Brief yet Notable Discovery of Housebreakers," etc., 1659. See also, "Street Robberies Considered; a Warning for Housekeepers," 1676; "Hanging not Punishment Enough," 1701, etc.



set up too near roads, by which horses might be frightened—the blocking up of highways by allowing carts to remain too long for purposes of loading or unloading—the rate of speed to be travelled—the width and construction of wheels—the weights to be carried—the number of passengers—the number of horses or other cattle—the most advantageous methods of harnessing and attaching animals to carriages—the best forms of axles, whether they should be straight or dished, the dishing being designed to bring the surface of the wheels in a fairer bearing upon the convex surface of the roads—whether the heads of nails used in affixing the tires of heavy carriages should be rose-headed and project above the tire, be level with the tire, or countersunk throughout its substance—the preservation of the rights of foot-passengers—the uncarting of rubbish or soil by the wayside—the removal of night-soil—the fencing of dangerous places—and a hundred other things, have been made the subject of anxious and important Parliamentary supervision. Talent of every kind has been called in; interests of every nature appealed to; and the most energetic measures taken to remove evils, as soon as a probable remedy had been pointed out. Hence the great superiority of the highways of our kingdom in the present day.\*

The difficulties which lay in the way of improvement were very great, chiefly on account of the absence of a correct system of road-making. The preamble of a bill passed in 1774, set forth that, *notwithstanding the establishment of turnpike trusts*, and the frequent repair of roads, yet they were “in a short time *broken up and*

\* The progress of turnpike legislation may be thus stated:—From 1700 to 1710, twelve Turnpike Acts received the Royal Assent; from 1710 to 1720, twenty-one Acts; from 1720 to 1730, seventy-one Acts; from 1730 to 1740, thirty-one Acts; from 1740 to 1750, twenty-nine Acts: thus far existed one hundred and sixty-nine Turnpike Acts. From 1750 to 1760, one hundred and eighty-five Acts were added; from 1760 to 1770, one hundred and seventy-five Acts; so that five hundred and thirty such Acts existed in the year 1770. These Acts were limited to twenty-one years' duration, the Legislature presuming that tolls might not continue to be always necessary; but, since the year 1830, the term has been prolonged to thirty-one years, and most of the Turnpike Acts have been renewed. In 1838 (the period when railways began to supersede roads) the total number of Turnpike Trusts exceeded eleven hundred. The debts of the Trusts at that time amounted to £8,500,000, of which £1,000,000 was unpaid interest. They paid £300,000 interest annually upon bond debts amounting to £7,100,000. The annual income from tolls was £1,800,000; their expenditure in making, maintenance, and improvements, £1,064,000; in management, £135,000.



*destroyed."* In order to prevent the cutting up of the roads, it was enacted that weighing machines should be set up in connection with toll-bars, and that heavy penalties should be inflicted upon parties offending against the statute. The weights allowed were:—

	Summer.		Winter.	
	Tons. Cwt.		Tons. Cwt.	
Waggons with 16-inch wheels . . .	8	0	7	0
Waggons rolling a surface of 16 inches .	6	10	6	10
Waggons with 9-inch wheels . . .	6	0	6	0
Waggons rolling a surface of 11 inches .	5	10	5	0
Waggons with 6-inch wheels . . .	4	5	4	5
Waggons with wheels less than 6 inches .	3	10	3	0
Carts with 9-inch wheels . . .	3	0	3	0
Carts with 6-inch wheels . . .	2	12	2	12
Narrow wheels . . .	1	10	1	7

So great, however, was the increase of traffic, and so imperfect the principles of road-making, that, notwithstanding the relief afforded by navigable rivers and canals, which had been multiplying for a period of fifty years, the state of the roads at the commencement of the eighteenth century was a matter of constant anxiety to the Legislature.

A Parliamentary Committee, in 1800, reported that the restrictions respecting the number of horses used in waggons and carts were insufficient, and that the laws for the repair of highways were utterly inadequate.

In 1806, a Committee appointed to examine into the use of broad wheels, and to determine which shape was best calculated for ease of draught, and for the preservation of the roads, and also to consider the Act limiting the number of passengers to be carried by stage-coaches, reported that the laws passed by Parliament for the security of the public, and the preservation of the roads, had been grossly evaded, "insomuch that, instead of six (the number limited by law), twenty passengers and more are often carried on the outside of stage-coaches. It is not unusual to see ten on the roof, three on the box, besides the driver, four behind on what is called the gamon board, and six on the dickey or chair; in all, often above thrice the number intended to be allowed." The consequence was, "accidents are continually happening in one part of the kingdom or another; and, indeed, scarce a week

passes without some of those carriages breaking down, and often killing the unfortunate passengers."

Here is the testimony of one of the witnesses, Mr. William Clarke:—

"Last week the Croydon coach broke down by being overloaded, having sixteen outside passengers, exclusive of the coachman, and two persons lost their lives, and several others were much bruised. Some little time ago the Ware coach broke down at Stamford-hill, one person was killed then, and several others received material hurt. The Portsmouth coach also broke down some time ago, and the coachman was killed; also the Bath coach, about a month ago, when several passengers received material injury. The Liverpool coach also, before Christmas last, broke down, and the same coach about eight months before that, when several passengers were dangerously hurt. In short, the instances are innumerable."

Another witness, Mr. Wm. Jackson, testified that—

"One of the Greenwich coaches broke down the week before last, near Westminster Bridge, when a woman broke her thigh, and several persons were dangerously wounded. The Woolwich coach, three days before that, was upset near Charlton, when one man was killed, and one lad very much injured, and all the other passengers hurt very materially."

The Rev. John Milton's coach was an invention, recommended by the Committee, designed to prevent these dreadful accidents, by placing as much as possible of the heavy luggage in a luggage-box below the body of the carriage. To prevent the fatal and disastrous consequences of breaking down, there were placed at the sides or corners of this luggage-box, small, strong, idle wheels, with their periphery below its floor; ready, in case of a wheel coming off or breaking, or an axle-tree failing, to catch the falling carriage, and continue its previous speed, thereby preventing its overthrow. But only a small number of these patent coaches were put upon the roads, probably in consequence of their being heavier than the ordinary coaches.

The Committee, in concluding their report upon the general state of the roads, made the following comment:—

"The man of curiosity, who travels for his pleasure; the man of business, who traverses the country in pursuit of his affairs; those whose occupation it is to supply one part of the kingdom with the produce of the other, or to convey from the interior to the sea-ports the articles of our industry for foreign consumption; and those who are to be supplied by these means with the necessaries or luxuries of life, *are equally disappointed in their hopes, and where they look for pleasure, security, economy, and expedition, they have to encounter fatigue and danger, expense and delay.*"

Farmers suffered considerable annoyance and loss from the operation of the Acts regulating the weight of loads, the width of wheels, and the number of draught beasts to be employed. In hilly countries the parish roads were so narrow, and worn by time and torrents, that they lay far below the level of the adjoining land. In these, carriages with broad wheels could scarcely move at all. To overcome the difficulty, farmers were frequently tempted to yoke more beasts than the existing Acts allowed. Wandering over the country there were a number of men who made a trade in laying informations. The informer took care to post himself on a turnpike road, near a place where some of these narrow lanes opened into it. When he observed a waggon drawn by additional beasts coming out of one of these ravines, he seldom allowed the driver time to take off his supernumerary animals, but, jumping from the hedge, gave notice of his intention to inform. In this way he extorted money—a system of robbery on the highways, “as effectual, and scarcely more innocent, than if extorted under terror of the pistol.”

Small husbandmen complained of the freedom from toll extended to broad-wheeled waggons, by which large farmers were able to send enormous weights of produce to market, at a smaller cost, and undersell their weaker neighbours. Gardeners, and the holders of small farms, endeavoured to counterbalance the privilege of the broad-wheeled waggons, by avoiding the turnpike roads, so that the parish roads were cut up, until they were in a deplorable condition.

In 1808, the Committee, which still continued its investigations, found the difficulties of the subject so great, that they ventured to express the opinion, that “the idea of conveying *goods* and *carriages* on railways is likely to prevail the more the subject is considered.” They also drew the attention of Parliament to a suggestion by Mr. Matthews for the construction of *stone railways* upon turnpike roads. These were to consist of two parallel lines of stone-paving upon which the wheels of carriages were to run, and were estimated to cost £4000 per mile.\*

From a communication written by Mr. Edgeworth, in 1808, it appears that springs were not generally applied to stage-coaches even at that late date. Before the application of springs to these coaches, the proprietors of the Shrewsbury coach paid, *in the course*

\* The History of Railways will form a distinct Section.



of a twelvemonth, £600 for goods damaged by jolting in the carriage.\*  
 "I recollect when, before springs were put to stage-coaches, one could not send a trunk fifty miles without having it knocked to pieces."†

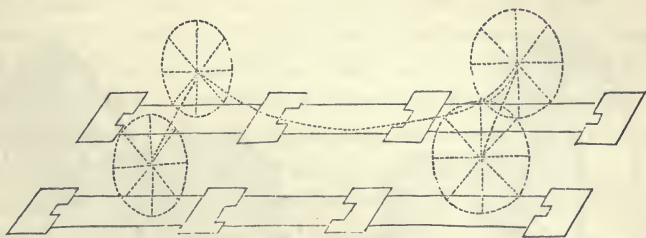


DIAGRAM OF A STONE RAILWAY.

A discussion respecting the merits of conical or cylindrical wheels lasted more than fifty years, and came many times under the consideration of Parliament. The questions were, which of those

\* The idea of applying springs to carriages is said to have first occurred to Mons. Thomas, a resident of Paris, in 1703; but that it was many years afterwards before his suggestion began to be adopted. This must be an error, for we find the following curious advertisement in the *Athenian Mercury*, April 9, 1692:—

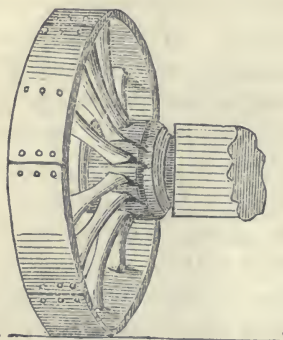
“An Advertisement about the Patent for easie Coaches.

“ALL the Nobility and Gentry may have the Carriages of their Coaches made new, or their old ones altered after this New Invention at reasonable Rates, and Hackney and Stage-coachmen may have Licenses from the Patentee, Mr. John Green, and Mr. William Dockwra his partner, at the rate of 12d: per week, to drive the Roads and Streets, some of which having this week begun, and may be known from the common Coaches, by the words *Patent-Coach*, being over both doors in carv'd letters. These Coaches are so hung, as to render them easier for the Passenger, and leff labour to the Horses. The Gentlemen's Coaches turning in narrow Streets and Lanes in as little, or less room than any French Carriage with a Crane-neck, and not one-third part of the charge. The manner of Coachmen's sitting is more convenient, and the motion like that of a Sedan, being free from that tossing and joulting to which other Coaches are liable, over rough and broken Roads, Pavements, or Kennels. These great Conveniences (besides others) are Invitations sufficient for all Persons (that love their own ease, and would save their horses draught) to use these sort of Carriages, and no other, since their Coaches need no alteration. All persons may be further informed at Mr. Green's house, in Carteret-street, by the Cock-pit Royal, in Westminster, and at Mr. Dockwra's house in Little St. Helen's in Bishopsgate-street, who hopes his Partner and he shall fare better by this Invention, than he did by setting up that of the Penny-Post.”

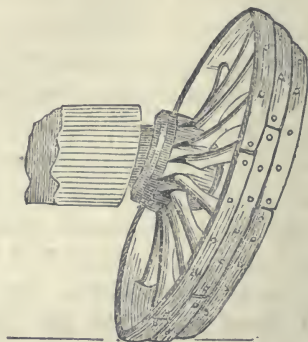
This is probably the advertisement of the first introduction of springs, together with the system of “locking” carriages, and turning them easily, which was rendered more practicable when the carriages were raised by springs.

† Testimony of George Orr, Esq., 1809.

wheels were most injurious to the roads—which most beneficial for purposes of draught. Connected with this question there were others of relative importance—whether roads should be convex, and to what degree—or concave, so that the wheels might run upon

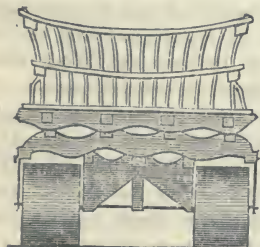


CYLINDRICAL WHEEL.



CONICAL WHEEL.

embankments—whether they should be shelving towards one side—or have an even flat surface. Each kind of wheel had its partisan—each description of road its advocate. Mr. Bourn proposed carts with broad rolling wheels, far exceeding the dimensions of those in use. But the flat surfaces of these rollers



MR. BOURN'S ROLLING CARTS.

became so clogged with the muck and shingle, which then formed a thick superstratum upon all roads, that their use was found to be quite impracticable. After a contest of many years, the conical wheels were fairly beaten. The experiments of Mr. Cumming, Mr. Edgeworth, Mr. Walker, Mr. Deacon, Mr. Jessop, and others, substantiated that conical wheels had a constant tendency to grind and pulverize into impalpable powder the hardest materials, which in wet seasons continually supplied a deep body of sludge; the dragging and friction on the conical rim, occasioned by the different velocities of the several parts of its periphery, broke the texture of the materials, and left them in a state to admit water; they increased the labour of cattle, and the extra exertion thus occasioned had no other effect than the destruction of the roads.

But, notwithstanding all these efforts to regulate traffic and govern the construction of vehicles, so that roads might be preserved in something like working condition, and the outlay of enormous sums of money for keeping them in repair, they were in a most deplorable state. Several of the outlets about town cost nearly £100 per mile for repairs. That of the Highgate trust, of twenty miles, required 10,961 loads of ballast, at 6s. the load, yearly. Uxbridge is fourteen miles from London; the trustees were offered £2500 for the tolls, which they refused; yet the roads were sometimes allowed to remain in an impassable state. Mr. Walker, who gave this evidence before a Parliamentary Committee in 1808, expressed his opinion that nothing but cast-iron could withstand the increasing wear and tear of the highways. Mr. Waterhouse, a large coach proprietor, stated to the Committee that he had frequently known the road across Hounslow Heath to be *two feet deep in mud*.

That such a state of things was prejudicial to the energies and commercial interests of the kingdom there can be no doubt. Travelling was expensive,\* slow, and dangerous. Robbers still infested the roads. Persons travelling by night preferred the mail, "no other coach being safe."† As late as 1764 large quantities of pottery-ware were conveyed from Burslem and Newcastle to Bridgenorth and Bewdley, in large crates, on horseback, for exportation, at £2 10s. per ton, there being no better mode of conveyance. In 1798, Mr. Porter‡ left the town of Gosport at one o'clock in the morning in the "Telegraph," then considered a "fast coach," and arrived at Charing Cross at eight in the evening, thus occupying nineteen hours in travelling eighty miles, being at the rate of rather more than four miles an hour.§ The rate of speed of

\* The mail-coach going from London to Manchester carried four inside passengers, at £4 14s. 6d. each; two outside passengers at £2 12s. 6d. each; three hundred-weight of luggage at 4d. per lb. The "Telegraph" (stage-coach) carried four inside passengers to Manchester at £4 4s. each; and ten hundred-weight of luggage at 4d. per lb.—*Mr. Hasker's Evidence before a Parliamentary Committee, 1811.*

† Evidence of Mr. Hasker.

‡ Author of the "Progress of the Nation."

§ There is extant the story of a man with a wooden leg, who was stumping along a road, when he passed a hostelry where a four-horse coach was changing its team. Being known to the coachman, that functionary hailed him, saying, "Halloa! Jim; going our way? You're welcome to a lift." "No, thank 'e," replied the pedestrian with the stump, "I'm in a hurry!"



coaches was six and a-half miles an hour, and this "tore the horses hearts' out," so that they lasted only three years. The stage-coach left Manchester at four in the afternoon, and arrived at London about nine the following morning, accomplishing the distance of one hundred and ninety miles in twenty-nine hours. The mail-coach left Manchester about two o'clock in the morning, and arrived in London about six the following morning; thus the mail took about one hour less than the stage.

Yet this was a complete revolution from the state of locomotion in a remoter time. Fourteen days were once required to perform the journey between London and Edinburgh. The Earl of Shrewsbury thought a four days' journey from Wingfield to London, one hundred and forty-six miles, a very short one. The carters of Cumberland took eleven days to travel from London to Londesborough, two hundred and thirty-four miles. Queen Elizabeth died on the 24th of March, and James of Scotland was proclaimed king in London on the same morning; "yet the news of it reached not York until Sunday, March the 27th." James I. occupied five weeks travelling from Edinburgh to London; but his progress was a royal one, in those days slow and full of pageantry. The news of the abdication of James II. did not reach the Orkneys until three months after the event took place. Although occasional and important matters were hastened more rapidly, a communication between Oxford and Yorkshire usually required a month. Charles I. made a great improvement when he appointed a post that should go to Edinburgh and back in six days. The news reached Bridgewater that Cromwell was made Protector nineteen days after that event, and the bells were then set ringing. Sir William Dugdale, in 1659, took three days in travelling by coach from Coventry to London. In 1667 a coach journey from Oxford to London required two days. In 1682 a similar journey from Nottingham to London occupied four days. In 1678 an agreement was made to run a coach between Edinburgh and Glasgow, a distance of forty-four miles, which was to be drawn by *six* horses, and to perform the journey from Glasgow to Edinburgh and back in six days. In 1752 the *fast* coach took four days journeying from London to Exeter. The journey was completed in the following stages:—Monday, dinner at Egham; put up for the night at Murrell's Green. Tuesday, dinner at Sutton; night at Salisbury. Wednesday, dinner at Blandford; night at Dorchester. Thursday, reached Exeter at one. So late as

1763 there was but one stage-coach from Edinburgh to London, and that set out only once a month, taking from twelve to fourteen days to perform the journey. Prior to railway communication between London and Scotland, there were three or four coaches which set out each day from Edinburgh to London, and conversely, performing the journey in from forty-five to forty-eight hours. In 1742 the one stage-coach that travelled between London and Oxford began the journey at seven in the morning, and did not reach its destination until the evening of the following day. The same journey has since been regularly performed *by coaches* in six hours. Instances are recorded of persons travelling in carriages, as late as 1780, taking care that their attendants carried hatchets for the purpose of lopping the branches of trees that stood in the way. Even so late as the middle of the last century it took a day and a-half for the stage-coach to travel from Edinburgh to Glasgow.

In Scotland, and the remoter parts of Great Britain, matters were much worse.

Sir Alexander Gordon, of Culvenan, in Scotland, giving evidence before a Parliamentary Committee, 1808, stated that in the year 1758 there were *no made roads* in the two counties of Galloway, Scotland; that there were only four or five carriages for travelling, and about twice as many carts, and no inland trade except in cattle. "About fifty years ago," he said, "the Marquis of Downshire was travelling through Galloway, having *labourers with their tools attending his coach*, which was then a necessary part of the retinue; but notwithstanding that precaution, his Lordship and family were obliged to send away their attendants, *and to pass a night in his coach*, upon the Corse of Slakes, a hill *three miles from the village of Creetown*. That event was the cause of consultation between his Lordship and the Duke of Queensberry, and other noblemen and gentlemen of the neighbourhood; and forty-seven or forty-eight years ago, Colonel Rixon was sent by Government, with a large party of soldiers, to make a road through these counties and Dumfries."

Nor were these defects peculiar to the "unmade" roads. In Mr. Arthur Young's "Tour in the North of England," 1770, he gives the following description of a *turnpike road* between Preston and Wigan:—"I know not, in the whole range of language, terms sufficiently expressive to describe this infernal road. To look over a map, and perceive that it is a principal one, not only to some towns, but even

whole counties, one would naturally conclude it to be at least decent ; but let me most seriously caution all travellers who may accidentally purpose to travel this terrible county, to avoid it as they would the devil, for a thousand to one but they break their necks and limbs by overthrows and breakings down. They will here meet with ruts, which I actually measured, four feet deep, and floating with mud, only from a wet summer—what, therefore, must it be after a winter ! The only mending it receives in places is the tumbling in some loose stones, which serves no other purpose but jolting a carriage in the most intolerable manner. These are not merely opinions, but facts, for I actually passed three carts broken down, in these eighteen miles of execrable memory.”

The Grand Duke of Tuscany, Cosmo III., visited England in 1669, and made a journey through some of its principal parts. At the request of the Duke, several large views of the places visited by him were taken ; and from these we gather interesting particulars of the general aspect of the country at that time. In many of the landscapes there are no indications of roads, although they embrace a large extent of country ; but wherever roads appear, they are represented as cut into deep ruts, with large stones thrown down in the worst places to fill them up. Not one of them exhibits a fence. The wide road in front of Whitehall, which may be supposed to have been the best of its time, being near the seat of royalty and of government, is shown to have been cut into four deep ruts, which are carefully depicted by the artist to the extreme perspective of the picture. In these views, therefore, we have a picturesque survey corroborating all the scattered evidence which we have gathered upon the defective state of the highways. In fact, it was only a few years prior to Cosmo's visit, that an Act was passed (1662) to regulate the width of the wheels of carts and waggons, and when it was endeavoured to enforce the law, it was found that the wheels, as then constructed, *could not travel in the ruts*, and as the ruts could not be done away with, a proclamation was issued to stay the punishment of offenders, until further proceedings in Parliament.

It has often been said that the exigencies of states give birth to genius in men by which difficulties may be overcome. We find, beyond this principle, a significant and remarkable providence in the fact, that at the time when our country was distressed and languishing for



the want of better means of intercommunication, there were born two individuals gifted from childhood with the peculiar talents which the necessities of the age demanded. M'ADAM was born in 1756, and TELFORD in 1757. It is remarkable, too, that as the genius of each became developed, one should exhibit, as Telford did, a predilection for the construction of canals, bridges, locks, roads, and tunnels, requiring for his plans new appliances and fresh materials, while the other, M'Adam, made it his particular aim to repair the old ways, and to apply to the construction of excellent roads the materials which lay in accumulated abundance upon every ancient highway, but which, from ignorance of the simplest principles of road-making, encumbered and barricaded the thoroughfares they were designed to repair. It is remarkable, too, that these men, whose services can never be too highly appreciated, having fulfilled their mission, died within two years of each other,\* but not until they had seen the complete success of their own labours, and caught a glimpse of those greater works which had been begun by other hands to meet the increasing wants of a still advancing nation.

M'Adam pointed out that while the construction of wheeled carriages, the weights they were to draw, and the breadth and form of their wheels, had been the subjects of constant inquiry, the main question, *the nature of the roads on which the carriages were to travel, had not been adequately attended to.* He pointed out that the roads round the metropolis were made with gravel, which was a defective material, inasmuch as that it contained earth, the component parts being of very unequal size, and all of them of a round form, having no points of contact, did not consolidate and form a smooth surface; the consequences were, that those roads were very heavy, were always loose and needing continual reparation. They were also generally so raised in the middle as to make it dangerous for carriages to pass over them, and many accidents happened from this erroneous form. In Essex, Kent, and Sussex, where flint was abundant, it was thrown upon the roads in just the state in which it was dug from the earth. The unequal action of large and small pieces jarred and jolted the carriages, and caused the highways to be in a continual state of roughness and want of repair. In Gloucester, Somerset, and Wilts, where limestone abounded, it also was laid down in unbroken and unequal masses, and the same evils prevailed. In Staffordshire and Shropshire, the

\* Telford died in 1834, M'Adam in 1836.

roads were principally made of round pebbles, of ten or twelve pounds' weight, mixed with sand, and those roads, although very expensive, were nearly impassable. In Devonshire, and in the northern English counties and southern Scotch counties, although good materials were abundant, the principles of road-making were so imperfectly understood, that the highways, kept up at an enormous expense, were in a most deplorable condition. M'Adam pointed out that the previous method of effecting repairs had been altogether erroneous, for when they were needed, the plan was to bring a supply of new materials, and throw them down upon the old and bad foundation. The materials of roads, he showed, were not worn out, *but simply displaced*, and therefore every old road had a quantity of materials sufficient to last for several years. As a proof of this, the cost of M'Adamizing Regent Street, Whitehall, and Palace Yard, amounted to £12,842, which was reduced by the value of the old materials to £6055.

A writer in the *Farmer's Journal*, 1821, claimed for Mr. Gabriel Stone, of Somerset Farm, near Axbridge, Somerset, the credit of introducing the system of what is termed Macadamizing roads prior to the time of M'Adam. He "rendered the road from Axminster to Hurtspit, and beyond, almost as smooth as a bowling-green, dry, firm, and effectual, inasmuch as stage-coachmen *complained that it was too good, as it made both coachmen and horses careless, so that they oftener tripped on this road than on the roads which were worse.*" These prejudices against new roads were not confined to coachmen. Many looked upon the works which were commenced as an unjustifiable cutting up of the country, and even quoted Jeremiah vi. 16.\* The old conservative coachman, the Marlborough one, would not use the new turnpike road, but stuck to the old waggon track.† The Blandford waggoner said, "Roads had but one object—for waggon driving. He required but five foot width in a lane, and all the rest might go to the devil." "The gentry," he considered, "ought to stay at home and be d—d, and not run gossiping up and down the country."‡

There can be no doubt that, although Mr. Stone may have adopted, to some extent, the system of M'Adam in one locality, it was to the great zeal and energy of the latter that the country became

\* "Thus saith the Lord, Stand ye in the ways, and see, and ask for the old paths, where is the good way, and walk in it, and ye shall find rest for your souls. But they said, We will not walk in it."

† Roberts's "Social History."

‡ "Gentleman's Magazine."

indebted for the excellent, safe, and economical roads which soon displayed their improved and durable surfaces in every part of the kingdom.

M'Adam's principle of road-making consisted in this—that angular fragments of hard material, sufficiently reduced in size, will coalesce, or bind, with other admixtures, into a compact and stone-like mass, nearly impenetrable to water, which being laid almost flat, so as to allow of carriages passing freely upon all parts of the road, will wear evenly throughout, not exhibiting the appearance of ruts, or of other inequalities. He laid it down as an important part of his system, that when roads were made they should not be abandoned to chances, and be put in repair only when they had become almost impassable; but that a newly Macadamized road should be watched for some time after its construction, and every inequality at once be filled up, until a hard and level surface had been obtained, when the road would last for years without further attention, and it would then matter little what wheels or weights travelled over it.

The system of road-making pursued by Telford was more elaborate and expensive than that of M'Adam. It was a part of his plan to reduce all steep ascents, and to take the most direct course to the places to be reached. He would allow no acclivity that should exceed one foot in thirty-five, so that no difficulty might be presented to fast driving, either in ascending or descending; the road should be properly fenced, and be of regular form and width; when likely to be much used by heavy carriages, it should have a regular foundation of large stones, over which a coating, about six inches deep, of small broken stones should be laid, so as to present a surface, solid, uniform, smooth, and convex. The road should also be raised above the level of the surrounding ground, have proper drains, and an exposure to sun and wind, so as to produce rapid evaporation of moisture. Of the perfection of Telford's system the following will afford some evidence. He had been engaged by the Commissioners of Highland Roads and Bridges to construct a new road in the Highlands of Scotland. Most of the new road was to be carried through extensive districts previously devoid of even a horse-track, or any accommodation for travellers; the lime for mortar was of necessity carried upwards of twenty miles upon horses' backs, and arch-stones were imported by sea. Yet in twelve and a-quarter miles of the above-mentioned road (as an example of its elaborate structure) there were seventy cross drains,



equal to two feet square each; nine arches of three feet span, one of four feet, two of six feet, two of eight feet, one of ten feet, one of sixteen feet, one of twenty feet, two of thirty feet, one of thirty-five feet, in all twenty in number, besides the repairs of still larger bridges over the Spey and Avon. The road was twenty feet in breadth, and the cost was about £530 per mile.

In Telford's Report to the Lords of the Treasury, made in the autumn of 1802, he stated that, previous to 1732, the roads in the northern parts of Scotland were mere tracks; and although, between 1715 and 1745, a few military roads were formed, and afterwards many more, they were little adapted to civil purposes; that, although bridges were then constructed over some of the smaller streams, yet the principal rivers could only be crossed by inconvenient and dangerous ferries. On the western side of the island, the military road, commencing near Dumbarton, passed through Inverary to the Black Mount—down the narrow, rocky pass of Glencoe, to Fort William—and along the Great Glen, with a branch to Bernera Barracks, opposite to the Isle of Skye; in all which routes the roads were equally rugged and impassable. In the course of eighteen years upwards of 920 miles of new roads were made in the Highlands of Scotland under Telford's system, in connection with which there were 1117 bridges. The effect was to open a new country, to increase the value of land, and to facilitate communication with parts that had previously been cut off from the centres of civilization. In England, the Carlisle road to Glasgow, and the London and Holyhead road, were reconstructed on Telford's plan; and in Wales the South road was surveyed and improved by Telford. These excellent highways are now unrivalled in any part of the world.

In England, the system of Macadamizing was found to be so successful and economical, that not only the main-roads and bye-ways underwent a complete transformation, but, in many of the principal streets of large cities, the carriage-paving was taken up, the stones broken and scattered, and the streets rendered smooth, dry, noiseless, and durable. By a Parliamentary Paper, 1843, it appears that the expense of maintaining and cleansing certain Macadamized streets in London amounted yearly to less than two shillings the square yard; that the expense of maintaining stone carriage-paving was about nine shillings the square yard. It is barely necessary to mention that wood-paving, which was tried at an expense of about ten shillings the square

yard has proved a complete failure.\* M'Adam was rewarded for his patriotic exertions by a grant of £10,000 from the Government. He declined a proffered knighthood, which honour was subsequently conferred upon his son. Telford found his reward in constant and remunerative employment upon the greatest public works of this kingdom, and of other countries—for his fame had spread throughout the world. We shall have, however, to speak of his other achievements.

Of the moral and social effects of road improvements, we have some interesting testimonies:—"When I first became acquainted with the Highlands," said Mr. Loch, before a Parliamentary Committee, in 1835, "the great proportion of the people, in place of being immediate tenants of the landlord, held of the different tacksmen. Since then almost all persons occupying land have become immediate tenants to the landlord. They were extremely irregular in their habits, being poachers on the river, and smugglers, and since then, in Sutherland, they have given up both, and have become most industrious workmen in every class of agricultural labour. It was necessary, at the period I mention, to get ploughmen from Elgin, and that side of the Moray Firth; and there was not a person who could build a stone wall, the ordinary mode of enclosing land in that country."

In 1822, Mr. Griffith, speaking upon the subject of roads in Ireland, said—"The fertile plains of Limerick, Cork, and Kerry are separated from each other by a deserted country, hitherto nearly an impassable barrier. This large district comprehends upwards of 900 square miles, and in many places it is very populous. The people are turbulent, and their houses being inaccessible for want of roads, it is not surprising that, during the disturbances of 1821 and 1822, this district was the asylum for white-boys, smugglers, and robbers, and that stolen cattle were drawn into it as to a safe and impenetrable retreat."

In the course of the succeeding seven years, several roads were opened through this deserted country to the places where communities had begun to gather. During that short period, according to the same testimony, "a very considerable improvement had taken place in the vicinity of the roads, both in the industry of the inhabitants and the

\* These figures may be liable to partial inaccuracies, in consequence of some inexplicable deficiencies in the Parliamentary Paper referred to.

appearance of the country ; upwards of sixty lime-kilns had been built ; carts, ploughs, harrows, and improved implements had become common ; new houses of a better class had been built, new enclosures made, and the country had become perfectly tranquil, and exhibited a scene of industry and exertion at once pleasing and remarkable."

A Board of Commissioners of Public Works was appointed in Ireland in 1831. In one of their subsequent reports the Commissioners state, that "Roads have been the means of fertilizing deserts, and of depriving the lawless disturbers of the public peace of their place of refuge, affording them at the same time resources for an active, honest industry, of which, we must do them the justice to observe, they have not shown any indisposition to avail themselves. In traversing a country covered with farms, and in a high state of cultivation, showing every sign of a good soil, and of amply remunerating produce, it becomes difficult to credit the fact that, ten or twelve years since, the whole country was a barren waste, the asylum of a miserable and lawless peasantry, who were calculated to be a burthen rather than a benefit to the nation ; and that this improvement may entirely be attributed to the expenditure of a few thousand pounds in carrying a good road of communication through the district."\*

\* While writing upon this subject, the Author's attention has been called to some Criminal Statistics quoted by Lord John Russell, in his inaugural address at the meeting of the National Association for the Promotion of Social Science, at Liverpool, October 11, 1858. His Lordship is reported to have said—"From the returns presented to Parliament, I am about to quote the results of the trials which have taken place on several subjects of criminal jurisdiction. Those are the offences of—1, shooting at, stabbing, or wounding ; 2, robbery ; 3, burglary ; 4, housebreaking ; 5, larceny in a dwelling-house ; 6, forgery, and uttering forged instruments. The returns show the numbers convicted, sentenced to death, and executed for these offences in one year in every 10 from 1817 to 1857, or, in other words, the changes which have taken place in 40 years. I give you the results:—1817, 911 convicted, 911 sentenced to death, and 78 executed ; 1827, 1113 convicted, 1113 sentenced to death, and 41 executed ; 1837, 1061 convicted, 405 sentenced to death, and none executed ; 1847, 1498 convicted, 18 sentenced to death, and none executed ; 1857, 2057 convicted, 21 sentenced to death, and none executed. The population of Great Britain has increased, from 1811 to 1851, in round numbers, from 12,000,000 to 21,000,000 ; and in England and Wales from 10,000,000 to 18,000,000. You will perceive that convictions have increased in a greater proportion. Upon examining these returns more in detail, there is a further result, namely, a great increase in the crimes accompanied with personal violence. Thus, the number convicted of shooting at, stabbing, or wounding, has increased, between 1817 and 1857, from 26 to 208, and of robbery from 154 to 378 ; while larceny in a dwelling-house has only increased from 143 to 246 ; burglary has



According to the returns made in 1841 for England and Wales, by surveyors of parishes, townships, or places which repair their own highways, increased from 374 to 473; housebreaking, from 152 to 568; forgery, etc., from 62 to 184. It would be very desirable to have more complete information on these several heads. It is very important to ascertain whether the repeal of capital punishment has led to greater readiness to prosecute on the part of the injured, and greater readiness to convict on the part of juries, and, lastly, whether, and to what extent, crime has really increased." It is much to be regretted that, upon so conspicuous an occasion, and by such an eminent social reformer, a statement thus calculated to discourage the friends of Progress should have been put forth without due consideration. His Lordship's statement amounts to this—that, in the face of our national improvements, and the diffusion of knowledge, crimes of the worst description have increased in a greater ratio than population. The many authentic facts contained in this History of Roads sufficiently negative such a conclusion. His Lordship's statistics commence in 1817, and extend to 1827, 1837, 1847, and 1857, each decennary period exhibiting a large increase in the number of *convictions*. Omitting from present consideration the great increase of population, it must be remembered that soon after the first period, the organization of an efficient police commenced. In 1824, the Irish Police was remodelled; in 1829, the Metropolitan Police was remodelled under Sir Robert Peel; the preamble of the Bill set forth that the local establishment of nightly watch and nightly police have been found inadequate to the prevention [and, of course, to the detection] of crime, by reason of the frequent inaptness of the individuals employed, the insignificance of their numbers, the limited sphere of their authority, and their want of connection and co-operation with each other. Further improvements were made in 1836; the Counties and District Constabulary were organized in 1839; in 1837, the most efficient detective, the electric telegraph, came into operation; during the same period, several extradition treaties were concluded between England and foreign states, and the escape of a criminal rendered almost impossible. The classes of offenders committing acts of personal violence, shown to have so much increased, are just those who, under the old system of watching and constabulary, would have escaped; but, under a well-organized system of police, they are now brought to justice. The abolition of capital punishment in cases of forgery and felony, as hinted at by his Lordship, renders the prosecution of such offenders a matter of greater ease than hitherto, when the death penalty was considered by the prosecutor and by juries to be more than adequate to the offence. These facts, together with the growth of population, explain the apparent increase of crime. The truth is, *the detection of crime, and the administration of justice, have progressed with the general improvement of the institutions of the country.*

The figures quoted by Lord John Russell, unexplained, point to these absurd hypotheses:—that education is more favourable to crime than ignorance; that wide streets, lit by gas, offer greater facilities to thieves than narrow lanes and flickering oil-lamps, or absolute darkness; that railways are conducive to highway robberies; and that electric telegraphs are of no effect in capturing felons; that the old "watch" was superior to the present system of well-disciplined police; and that the best remedy for crime is to let it alone in unmolested ignorance, since, to instruct the people and to institute protective forces, only augments the criminal calendar!

ways, it appears that, in 1839, the length of turnpike roads was 1966 miles ; of streets or roads repaired under local acts, 2869 miles ; and of all other highways, 96,992 miles ; making of highways for wheeled carriages in England and Wales, 119,527 miles.\* The average expenditure in the repair of highways (exclusive of turnpike roads and streets under local Acts) was £12 18s. 5d. per mile. According to other returns, the average annual expenditure in the five years ending 1839, on 22,000 miles of turnpikes and roads under local acts, was nearly £51 per mile, of which £36 were for repairs, £9 for improvements, and £6 for management.

There were in England in 1837, at which time they probably attained their maximum number, fifty-four four-horse, and forty-nine pair-horse mail-coaches. The greatest speed attained by them was a little over ten miles an hour. There were thirty four-horse mails in Ireland, and ten in Scotland. The number of stage-coaches, including mails, licensed by the Commissioners of Stamps at the beginning of 1837, was 3026. Of this number, about one-half were connected with London.† In the year 1765, it was estimated that the number of four-wheeled carriages in the kingdom was 12,904, in 1825, they had increased to 26,799, besides two-wheeled carriages, which in 1765 were a very inconsiderable number, but amounted in 1825 to 45,856.

In 1824, a Canterbury paper published a brief article upon the improvement of coach travelling, in which it remarked upon the fact, "that we can now travel to London and back, and have time to transact business in one day," the whole distance being a hundred and twelve miles. That, indeed, was a great achievement in those times. Then the stage-coach, with its beautiful team, had become a "thing of beauty and of joy"—but not "for ever." The sober people of Canterbury, as they ran to their doors when they heard the rattling of the wheels, or the shrill vibrations of the horn, may have thanked their stars that they lived in times to see such a beautiful picture, and when, as they believed, the perfection of locomotion had been achieved ! The Brighton road may be said to have been covered with coaches, no less than twenty-five running upon it in the summer. The fastest was the Red Rover, which performed the journey under five hours.

\* There were some deficiencies in the returns, which would probably have added 1000 or 2000 miles more.

† Porter's "Progress of the Nation."

That called the Age, driven and horsed by Mr. Stevenson, was an object of such admiration at Brighton, that a crowd collected every day to see it start. Mr. Stevenson had been a graduate at Cambridge, but his passion for the *bench* got the better of all other ambitions. At a certain change of horses on the road, a silver sandwich-box was handed to his passengers by Mr. Stevenson's *servant*, accompanied by a glass of sherry.

The Edinburgh mail ran the distance, 400 miles, in forty hours, and people regulated their watches by her punctuality. Stoppages included, this approached eleven miles an hour, a great deal of it by lamp-light. The Exeter day-coach, the Herald, ran over the ground, 173 miles, in twenty hours—an admirable performance, considering the hilly country through which she made her journey.\*

But we are aroused from this pleasant contemplation of the past by a sense that we have already exceeded the limits allotted to our subject.

The paper of the day† has just been brought in, and, singularly enough, our eyes fall upon the following paragraph:—

“THE LAST MAIL COACH.—The old Derby mail, the last of the four-horse coaches out of Manchester, finished its course on Saturday. When the rivalry of rails and steam had run all other coaches off the road, the ‘Derby Dilly’ still held its own, and the well-known route through Buxton and Bakewell to Rowsley could still boast its four-in-hand, though the team was hardly equal to what had been seen when coaching was in its best days. It was thought, however, that amid the hills and peaks of Derbyshire, a relic of the old coaching glory might be maintained. But the Midland line penetrated as far as Rowsley some time ago, and more recently the London and North-Western reached Whaley Bridge on the other side, leaving but a short link to be filled up, and the last of the old four-in-hand mails has succumbed to the competition of the iron horse.”‡

We have hitherto made no mention of an important appendage to every noble retinue, at a time when the roads of the country were undeveloped, when there was no post, and when conveyances were few and slow: these were Running Footmen, who were employed to bear messages and letters with speed, and also to attend on foot persons travelling on horseback or in carriages, so as to be ready,

\* “Quarterly Review,” 1832.

† October 9, 1858.

‡ The last mail-coach probably of the Midland Counties. There are others yet lingering on the roads of Cornwall, Wales, Ireland, and Scotland, waiting for the extension of the iron arms of railways.



in case of any emergency or disaster, to render assistance, or be the bearers of messages. The following description of one is from the "Recollections of the Life of John O'Keefe :"—

"My Lords, or the Squires, was called the Big House, and had its privileged fool or satirist, its piper, and its Running Footman: the latter I have often seen skimming or flying across the road; one of them I particularly remember, his dress, a white jacket, blue silk sash around his waist, light black-velvet cap, with a silver tassel on the crown, round his neck a frill with a ribbon, and in his hand a staff about seven feet high, with a silver top. He looked so agile, and seemed all air, like a Mercury: he never minded the roads, but took the shortest cut, and, by the help of his pole, absolutely seemed to fly over hedge, ditch, and small rivers. His use was to carry a letter, message, or despatch; or, on a journey, to run before and prepare the inn, or baiting-place, for the family or master, who came the regular road in coach and two, or coach and four, or coach and six: his qualifications were fidelity, strength, and agility. It was the general rule of every man in the character of a gentleman, never to gallop, or even trot hard, upon a road, except emergency required haste."

The running footmen wore caps like our present jockey caps, and their clothing, when running, was very slight. The use of their long poles was, as has been seen, to enable them to leap brooks and ditches; but it had also another utility: in the knob at the head they carried a potion of white wine and egg, to reinvigorate themselves when exhausted. Some of these men would run three-score miles a-day. One of the Dukes of Marlborough (prior to 1780) drove a phaeton-and-four from London to Windsor against one of them for a wager, and just beat him, but the poor fellow died soon after the feat. About sixty years ago there was residing at Lyndhurst a very old man, who had been a running footman. It was his boast that he once ran from London to Lyndhurst, about eighty-six miles, in one day. When roads became improved, and carriages lightened, these expert runners became useless. Aristocratic families, however, were unwilling to entirely give up such an ancient retainer, and the running footman by degrees degenerated into the liveried attendant with a long cane, following ladies in the parks, and leading a pet lap-dog.

We shall have, hereafter, to record the Progress of the Post-office, of Newspapers, and of Telegraphs for the transmission of intelligence. But we may now observe, that in the earlier periods of our present history the spread of news was a very tardy operation, and the country was frequently disturbed "in patches," if the term may be allowed, by strange rumours and false alarms. By the time that the intelligence

of any uncommon piece of news reached the northern counties, or the west of England, it was almost forgotten at the point whence it originated. Indeed, the chief newsman was the ballad-hawker, who perambulated the country, shouting out, with stentorian voice, a sort of recitative, narrating a "glorious victory," an "'orrid murder," "a last dying speech and confession," or a "hateful apparition," and then commenced singing, in strains not the most melodious, the details of the intelligence, in doggerel rhyme, to some popular air. Here is an example of one of the ballad news-sheets of 1665:—

#### "THE ROYAL VICTORY

Obtained (with the Providence of Almighty God) against the *Dutch Fleet*, June the 2nd and 3rd, 1665, a fight as bloody (for the time and number) as ever was performed upon the Narrow Seas, giving a particular account of Seventeen Men of Warr taken; Fourteen Sunk and Fired. But Forty that could escape of their whole Fleet, which at this time are hotly pursued by the Earl of *Sandwich*. Their Admiral, *Opdam*, slain by the Duke of *Yorke's* own Frigate. *Van Trump* Sunk by Capt. *Holmes*.

"The number of their kill'd men amounts to 10,000.

"*To the Tune of Packington's Pound.*"

[Here follow two rude engravings, a portrait of the Duke of York, and a picture of the battle, and then eleven verses, of which the following forms the conclusion.]

"Stout Lawson, and Moira, there did both play their parts,  
 Who emptied their Guns in their Enemies' hearts,  
 The burly fat *Dutchman* being cut out in Slips,  
 The Vessels did looke more like Shambles than Ships.  
     God prosper the Fleet  
     And send they may meet  
 Du *Ruiter* to make up the Conquest compleat.  
 God bless all the Princes, and Everything  
 That Fights for y<sup>e</sup> Kindome and prayes for y<sup>e</sup> King."

Among the various news-sheets of the sixteenth century we have found some curious examples, such as "*Sad Newes from Blackwall*," "*Glorious Newes from Greenwich*," etc., published in *London* probably a week after occurrences to which they related.

The first mention of the improvement of River Navigation for the ease of inland commerce is that of the union of the rivers Trent and

Witham, in the reign of Henry I., for the purpose of establishing a navigation from Yorksea to Lincoln, a distance of seven miles.\* In the reign of Henry VI., an Act was passed for deepening the river Lea from the town of Ware to London. We find no other enactments, either for the improvement of rivers or havens, until the reign of Henry VIII., that of the 4th Henry VII., for preserving the river Thames, relating only to the fishing therein. In 1606 an Act of Parliament passed, directing a passage to be made by water from London to Oxford; but, through some defects, either in the law, or in the plan proposed, the Act was afterwards repealed. In 1624 another Act passed for making the river Thames navigable for barges, lighters, and boats, from the village of Burcot, seven miles on this side of Oxford, to that city, "for the conveyance of Oxford free-stone, by water, to the city of London; and of coals, and other necessities, from London to Oxford, now coming, at a dear rate, only by land-carriage; whereby the roads were become exceeding bad." We learn from the preamble of this Act, that river navigation had existed for some time previously, since it stated that "the river Thames, for many miles beyond the city of Oxford, is already navigable for such barges, lighters, etc., and also from Burcot to London." In 1634 King Charles granted a license to one Thomas Skipwith to make the river Soare navigable, from its falling into the river Trent, up to the town of Leicester, Skipwith yielding a tenth part of all the profits, to be paid into the King's exchequer. In 1635 King Charles directed a special commission for making the river Wey navigable from Guildford to the river Thames at Weybridge. The river had evidently been previously navigated, as the record observes that "it is now become unfit for the carrying of barges, boats, or vessels of any burden, for transporting of commodities to and from the town of Guildford;" and Commissioners were thereby authorized to survey the said river Wey, and to inquire by what means the same had become unfit for the carrying of barges, etc. In 1636 we find another Commission to a number of lords and gentlemen, for enabling William Sandys, an esquire, to make the river Avon navigable for boats and barges, from the river Severn, near Tewkesbury, through Warwickshire, Worcestershire, and Gloucestershire, to the city of Coventry; and also the river Team, on the west side of the Severn, towards Ludlow. The early efforts for the improvement of river navigation

\* Anderson's "History of Commerce."



were, however, confined to the deepening of the beds of the rivers, and to the clearing and strengthening of the towing-banks. For the most part, these improvements were not very successful. The current of the rivers gradually changed the form of their channels; the dykes, and other artificial constructions, were apt to be destroyed by inundations; alluvial sand-banks were formed below the weirs; in summer the channels were frequently too dry to admit of being navigated, while at other times the current was so strong as to render it quite impossible to ascend the river, which at all times, indeed, was a laborious and expensive undertaking. These difficulties in the way of river navigation seem to have suggested the expediency of abandoning the channels of most rivers, and of digging parallel to them artificial channels in which water might be kept up at the proper level, by means of locks. The Act passed by the Legislature in 1755, for improving the navigation of Sankey Brook, on the Mersey, gave rise to a lateral canal of this description, about eleven miles in length, which deserves to be mentioned as the earliest effort of the sort in England.\*

But it was the Duke of Bridgewater who first aroused public attention to the national importance of undertakings of this kind, by a canal which he formed to convey coal from one of his estates, at Worsley, to Manchester, about nine miles distant. The novel features of this work consisted then (1759) in its taking a direction away from all natural water-courses, passing boldly across the river Irwell, at a height of forty feet above it, by means of an aqueduct 600 feet long, and tunnelling through the solid rock of a large hill, to reach the mouths of the coal pits. This canal, and many others, were made at the private expense of the Duke of Bridgewater, who is said to have lived upon the limited income of £400 a-year, in order that he might invest the whole of his princely income in these great undertakings. The signal success which attended the first canals convinced the nation of the great advantages to be derived from still-water navigation; and extensions from the river Mersey to the Trent, Severn, and Thames quickly followed.† Mr. Telford, in his autobiography, mentions, as an instance of the eagerness of the public, about 1790, for canal speculations, that, at the first general meeting of the promoters of the Ellesmere Canal (112

\* M'Culloch's "Dictionary of Commerce."

† Waterston's "Cyclopædia of Commerce."

miles long, and connecting the Mersey, Dee, and Severn), four times the estimated cost was at once subscribed without hesitation.

From the commencement of the Canal period to the introduction of railways, there had been formed in England about 2400 miles of

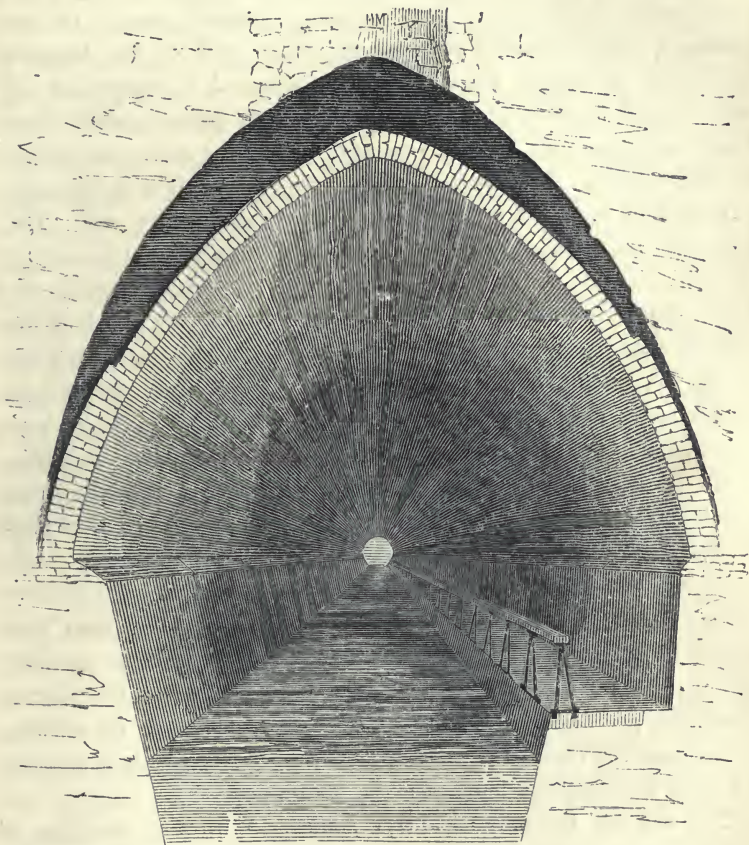


CANAL NAVIGATION.

canals; in Ireland, 300 miles; in Scotland, 200. These works were, in their time, unequalled for extent, and for all sorts of difficulties overcome. As specimens of the latter may be mentioned the tunnel at



Blisworth, on the Grand Junction Canal, which was 3080 yards in length. The underground cuttings in the Duke of Bridgewater's Canal were said to amount to 18 miles long, and to have cost £170,000. The Marsden tunnel, in the Huddersfield Canal, was 5451 yards long. The



TRANSVERSE SECTION OF THE THAMES AND MEDWAY CANAL TUNNEL,  
*Showing the appearance of the opening at the distance of one mile within.\**

tunnel at Supperton, in the Thames and Severn Canal, was two miles and three-eighths in length, and 250 feet below the highest point of the hill through which it was made. In the Thames and Medway Canal, between Gravesend and Rochester, a tunnel two miles and one-

\* From Simms's "Public Works of Great Britain."



eighth was cut through chalk, and one of the tunnels of the Leominster Canal, at Pensax, was 3850 yards long.\*

The slowness of Canal communication, however, rendered it a weak competitor with Roads for the conveyance of passengers. During the progress of canals, roads underwent, as we have already shown, considerable improvement. In Scotland, a greater amount of canal passenger traffic occurred than in any other part of the kingdom. The Forth and Clyde Canal Company succeeded in attaining a high rate of speed, by the adoption of extremely light barges, called "swift boats," weighing only from two to three tons, and made so as to divide the water easily. They travelled at the rate of from eight to nine miles an hour, and conveyed from eighty to ninety passengers each. They performed the distance (56 miles) between Edinburgh and Glasgow in seven hours. On the Grand Junction Canal, between London and Birmingham, *fly-boats* were employed, which averaged a speed of four miles an hour; they weighed from seven to seven and a-half tons, and carried from ten to fifteen tons of goods. The ordinary heavy boats were towed at the rate of from two to two and a-half miles an hour, they weighed six and a-half tons, and carried twenty tons of goods.

To illustrate the advantages to commerce arising out of the means of communication afforded by canals, it may be mentioned that when the Duke of Bridgewater commenced his canal, the price of *water-carriage* by the old navigation on the rivers Mersey and Irwell, from Liverpool to Manchester, was twelve shillings the ton, and from Warrington to Manchester ten shillings the ton. Land-carriage was forty shillings the ton; coals at Manchester were retailed to the poor at sevenpence per hundred-weight, and often dearer. Upon the opening of the canal the tonnage at once fell to one-half the previous amount, and coals were sold at fourpence the hundred-weight.

Nor was this the only advantage gained. With the exception of winter frosts, canals afforded a constant and certain passage for merchandise. The communication by rivers was frequently ruinously slow, from the resistance of the streams, and their winding course, from floods in wet seasons, or from valuable freights being grounded for the want of sufficient water in summer. Manufacturers and merchants were doomed to ruinous losses by these interruptions of intercourse. Thus, neither by road nor river was it possible for a healthy commerce to be carried on. Before the Aire and Calder Navigation was

\* Waterston's "Cyclopædia of Commerce."

improved, the clothiers of Halifax had no water-carriage within thirty miles, and they sustained great losses by the breaking down of carriages through the badness of the roads. The clothiers of Leeds and Wakefield were often obliged to suspend their business for two months at a time, on account of the roads to market being impassable.

Notwithstanding the great utility of these public works, they were, in many instances, strongly opposed. It was a common objection to them, that a large number of people were supported by land-carriage, and that canals would be their ruin. An advocate of the new canals, regretting that such great injuries would result to carriers, gravely proposed, as a compromise, *that no canal should be allowed to come within four miles of a populous town*, so that carriers might find employment in conveying goods from the canal termini to their ultimate destination. It was contended also that canals would have the effect of destroying the breed of horses, and that the number kept would be so reduced, that persons would be unable to sell their oats, and must inevitably be ruined. Other arguments against them were, that they would swallow up, as with a watery deluge, an enormous amount of land, upon which food might be grown; that the lands in their locality would become swampy, and overgrown with rushes; that their banks would burst, and towns and villages be constantly liable to be swept away!

When the project was first started for constructing a canal from Birmingham to the Staffordshire and Worcestershire Canal, through the principal coal-works, it met with violent opposition from various quarters, particularly from many landowners, and the usual newspaper controversy, pamphlets, squibs, declarations, and protests emanated from the contending parties. It was denounced as an unnecessary and mad scheme; the interested who had invested their capital in many thousand carts and horses, and who delivered coal in the town at thirteen shillings per ton, scoffed at the scheme of boats bringing it cheaper, and every conceivable objection was opposed to the new project. When the canal was proposed from Reading to London, a vehement opposition was raised against it. It was urged that the Thames would be injured and neglected; that the town of Bray, and the neighbouring villages would be deluged; and so energetic were the opponents of this scheme that they succeeded in causing its rejection. These are only a few instances out of a large number.

When the Duke of Bridgewater's canal was completed as far as

Barton, Mr. Brindley, the Duke's engineer, proposed to carry it over the Irwell by an aqueduct thirty-nine feet above the surface of the water in the river. This was, however, regarded by many as being an extravagant project, and Mr. Brindley, wishing to assure the Duke of the practicability of the scheme, requested that the opinion of another engineer might be taken. The plan was laid before that authority, and he pronounced upon it this judgment:—"I have often heard of 'castles in the air,' but never before was shown where one of them was to be built!"



AQUEDUCT OVER THE IRWELL: BRINDLEY'S "CASTLE IN THE AIR."

This unfavourable verdict did not, however, deter the Duke from supporting the project. The aqueduct was commenced in September, 1760, and the first boat sailed over it on the 17th July, 1761. "It is no unpleasant sight," said a spectator at the time, "to see one vessel sailing over another, which is floating upon the waters nearly fifty feet below!"

Of the imperfect and dangerous state of river navigation, prior to the enactment of laws to control boatmen, no adequate conception can be formed. An Act was passed in 1691, 2nd and 3rd William and Mary, to enforce a series of regulations respecting the bargemen and watermen of the river Thames. Prior to the passing of this Act, many disasters had occurred through boats being managed by infirm old men, or young and incapable boys. The watermen were given to



dicing, carding, and drinking, to the neglect of their duties to passengers, and were generally described as "rude, ignorant, and unskilful." Upon the issuing of a Royal Commission for the impressment of seamen, the able-bodied watermen all absconded, and it was a matter of difficulty to obtain men capable of managing boats on any part of the Thames. The watermen, driven into the country, without means of subsistence, lived by robbery, and when the Commission ceased, they returned to their former pursuits still more brutalized and hardened. Frequently they took passengers into their boats, and rowing them towards some unobserved place, robbed, and either drowned them, or set them on shore, at a point difficult of access, in a state of complete destitution. To such an extent did these evils prevail, that the Act declared that "Passengers were daily put in fear and peril of their lives."

Various Acts for the improvement of the Thames' navigation, and the regulation of watermen, were passed from time to time. The passage to and from Gravesend to London was made more commodious and safe for passengers than before, by Act of Parliament passed in 1736—7, for regulating the Company of Watermen, etc., between Gravesend and Windsor, which limited the number of passengers to forty at the most, on board the tilt-boats, and ten at most by the wherries; directed the burden of the said boats; prohibited close decks, and bails nailed down in the wherries; regulated the age of watermen navigating the said boats; and directed a punishment against such watermen as wilfully lost the tide, *or set passengers on shore two miles short of the place to which they were bound*. The officers of the Watermen's Company were thereby bound to provide men at Billingsgate, and at Gravesend, who, as near as possible, night and day, at every time of high-water, and first of flood, were, at the respective places, to ring publicly a bell set up for that purpose, for *fifteen minutes*, to give notice to the tilt-boats and wherries to put off, and make the best of their way, without lying by or putting on shore, being within two miles of their respective ports.—"Which excellent provision must be a great ease and safety to all persons who are obliged to use this passage."

There was then only the old London Bridge across the Thames, and the difficulty and delay of conveyance to and from the opposite sides of the river must have been considerable. Yet, when it was proposed to build another bridge at Westminster, it met with deter-

mined opposition. The following "REASONS" against the new bridge were gravely drawn up and presented to Parliament, and printed at the time as a Parliamentary document:—

## “REASONS

AGAINST

*Building a Bridge over the Thames at Westminster.*



HIS New Bridge will prejudice the Navigation of the River :

- By retarding the Flux of the Tide ;
- By increasing the Shallows and the Sandbanks ;
- By creating new ones in the River everywhere within the compass of the Flux of the Tide ;

By the Danger and Delay which it will create to the Conveyance of Goods and Passengers, more especially in and about the New Bridge ;

*Danger to the Wherries or smaller Boats.*

— to the larger Barges particularly, which are unwieldy, heavy loaded, and not easily governed either by Sail, Rudder, or Poles.

— by the Fall of the Water there, whether upon the Flux or Reflux of the Tide :

— by the Eddies which will thereby be created ;

— by the Shallows and Sand-Banks which will be cast up thereabout.

*Delay even to Wherries or small Boats, more especially to larger Vessels, which must no longer pass that Way by Night, nor in the Day Time, but at High Water, nor without Danger of falling upon the Piers of the said Bridge, especially in High Winds.*

All which Suggestions are verified by Experience in the like Case.

*Hence will follow :*

The Increase of Labour and Wages ;

The rise of the Price of all Commodities, whether of Provisions most necessary, as Grain, Meal, Malt, Fuel, &c., or

Other Goods and Merchandise whatsoever, brought hither from the Western Parts ; as of Commodities sent hence thither, as Coals, Merchandise, &c.

The Danger of the Loss of valuable Cargoes, of the value of L.2000 and more.

The Decrease of Watermen so useful to the Sea Service, whether

Private, or

Publick Service.

Danger to the Houses and Lands adjoining, especially between the two Bridges ;

— by Overflowings ;

— by Breaches which may be made in the Banks, which may neither be prevented nor retrieved.

*Add hereto, The Injury which will be done to the City of London, whether*

In its Rents, Tolls, and Profits of Markets, etc.

The Revenue appropriated for the maintenance of the Bridge will be greatly lessened.

The Revenue of the City of London will, in many respects, be injured, and the Trade thereof ruined.

If the City's Estate be impaired, the Orphans will loose Part of the Security for their Debt ; and though the City may be able to pay on L.8000 *per annum* to the said Orphans (which is a question) it will be impossible to pay in a Few Years L.14,000 *per annum*, as the City stands oblig'd to do. In the Trade of the City, which by this means will be transferred to the West End of the Suburbs, and which City will thenceforward be no longer able to pay, as hitherto it hath done, and still doth, no less than above L.60,000 *per annum* towards the Land-Tax only, at Two Shillings in the Pound, besides all other Public Taxes, Parish Taxes, Ward Taxes, and Scots of Freedom, which are very large.

It will be injurious to the Property of the City :

In the Soil of the River *Thames* :

In the Conservancy of the River *Thames*, which reaches from above *Stanes Bridge* down to *Yenland*, in the County of *Kent*.

*Lastly, The like Proposals have been formerly made in the several Reigns of King Charles II., King James II., and King George ; but rejected for Reasons now suggested."*

When we view the Thames in its present state, and contemplate the series of beautiful bridges, from the new Suspension Bridge at Pimlico to that which bears the name of London—thronged by day, and busy even at night; when we look down from the broad arches of these splendid structures, and see steamers plying to and fro at rapid speed, their decks crowded with passengers; when we reflect that not only *over* the waters of the Thames do tens of thousands of people pass daily, but that *under* the bed of the river, beneath the coming or returning rush of waters, men cross and recross, and pursue their pleasures or their toils free from delay and danger—we look back with a sad interest to the time when a considerable number of the people feared, distrusted, and opposed, every step to improvement, and when the national mind, lacking the boldness and energy which characterize it in the present day, was ready to crucify the propounder of a new theory, or the projector of a new invention.

To Brindley, the Duke of Bridgewater's engineer—the projector of the “Castle in the Air”—the nation is largely indebted for the great experiments which established canal communication, and perfected those bold undertakings of engineering and commercial enterprise that gave the public confidence in works of progress, without which the enormous improvements of subsequent years would have been deemed mad and ruinous schemes. Brindley preceded M'Adam and Telford by some forty-one years, and when he died, they were ready to continue the work he had begun. Telford directed his attention especially to the extension of canals and bridges, which found a great increase, and a high perfection, under the direction of his skill. Nor must we omit the Duke of Bridgewater from those to whom the nation's gratitude is due. Born to wealth and greatness, he devoted both money and influence to works productive of the public good. These were the men who conferred upon their country benefits the value of which can never be fully estimated. If we could return to by-gone times, and realize but one day of the difficulties, inconveniences, and dangers which were incidental to them, we should then be able to comprehend how large a debt of gratitude we owe to those who, before our coming, “exalted the valleys, made the mountains low, the crooked straight, and the rough places plain.”

The improvement of roads practically extended the area of every

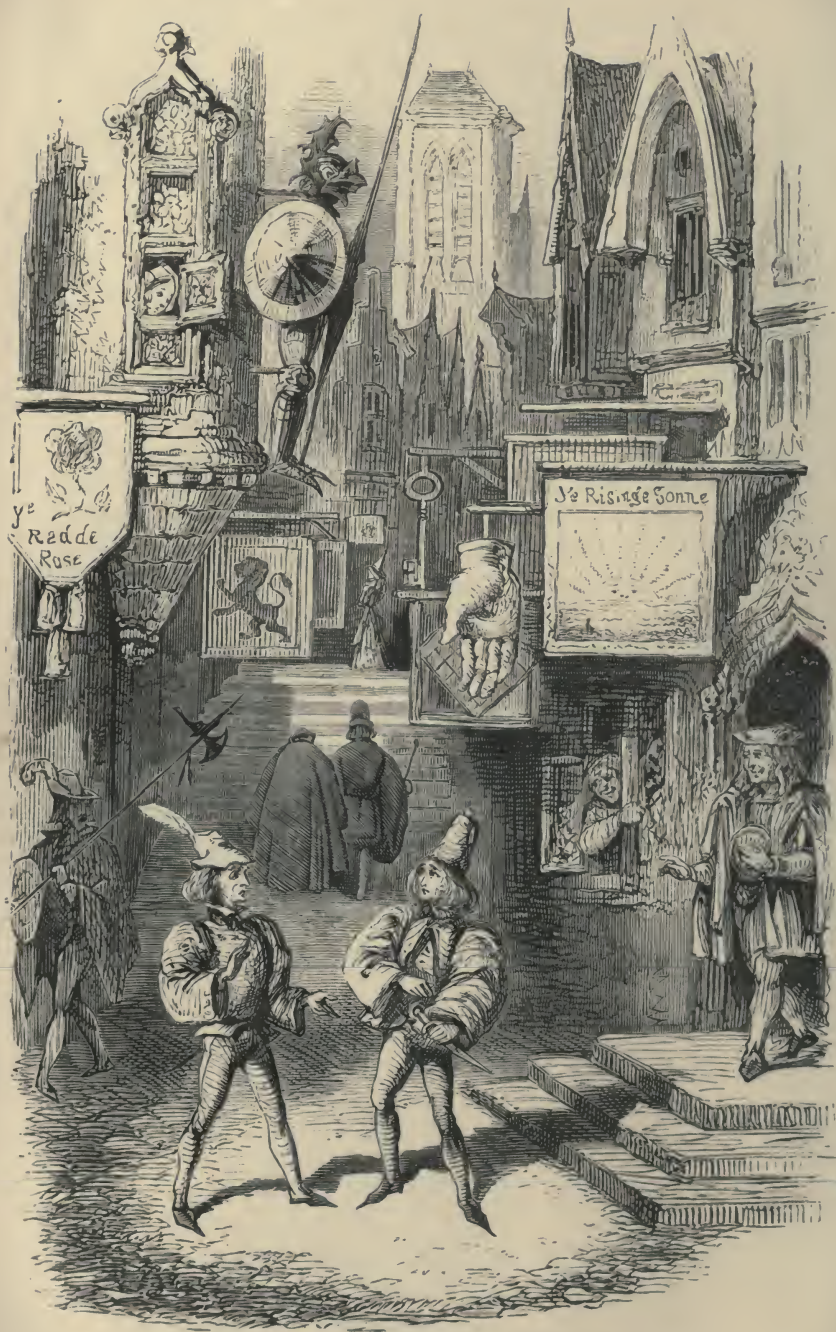


man's social existence—broke down barriers between localities and converted clans, tribes, races, and factions into one great community—gave expansiveness to man's ideas, boldness to his enterprises, honesty and patriotism to his motives—and taught mankind that their future work should be construction, not spoliation. While improvements were under discussion, it was a constant argument in their favour that, in the event of rebellion or invasion, soldiers might be marched from one extremity of the island to another, and heavy artillery be conveyed with a speed hitherto unknown. This was with many the narrow motive of the approbation and support which they gave to projected improvements. We have to be thankful that our better roads have not proved the highways to battle-fields. The few local disturbances which have broken out since the era of improvement, occurred before the effects of freer communication had been fully manifested, or in localities where they had been little felt. In a previous century the same amount of local discontent would have caused the State years of anxiety and peril. Results have arisen which were foreseen only by a few. The luxuries of cities and towns have been diffused through villages and hamlets, and the produce of the country, and the surrounding sea, has been transmitted in abundance to the central markets. Organs of information and instruction have found their way into the most remote places, and the broad line of demarcation between citizen and countryman is fast disappearing. When the stage-coach had arrived at perfection, it was frequently spoken of as "a powerful agent of civilization." We shall have hereafter to record the history of works of Progress which eclipse all that have previously occupied our attention. But let us never forget the debt of gratitude we owe to those who in less favoured times were the first to

" Bid Harbours open, Public Ways extend ;  
 Bid Temples worthier of their God ascend ;  
 Bid the broad Arch the dangerous flood contain,  
 The Mole projected break the roaring main ;  
 Back to his bounds, their subject Sea command,  
 And roll obedient Rivers through the land."

(END OF THE SECTION UPON "ROADS, CARRIAGES, AND INLAND  
 NAVIGATION.")





STREET ARCHITECTURE OF THE FIFTEENTH CENTURY.



### III.—DOMESTIC ARCHITECTURE.



THE primitive architecture of all countries exhibits a striking simplicity, and differs only in so far as the variations of climate, and the nature and produce of the soil, may necessitate. The Esquimaux constructs a rude hut of snow, and shelters himself from biting winds within walls of congealed water; the Arab protects himself from the scorching sun by a canvas tent, propped up by branches of trees; while the Hottentot erects a dwelling which exhibits an intermediate character be-

tween these extremes—a hive-like hut of canes and reeds, with a skin, or piece of matting, falling over the opening which forms the door-way. In various parts of the world there still exist all the primitive and various types of human habitations; nay, in our own kingdom, within a few hundred miles of each other, the mud-cabin of the Irish labourer, and the palace of the Queen, supply, at the present moment, examples of architecture whose eras in British history are divided by a period of nearly two thousand years.

In Britain, doubtless, before the system of building took any settled form, and long before the art of architecture arose to direct the operations of workmen, there were many and varied

contrivances for the construction of huts and sheds. Vitruvius, who wrote upon the subject in the time of Augustus, described the most general and primitive building as consisting of trees fixed upright in the ground, side by side, so as to include the space to be inhabited. The roof was laid over the tops of the upright trees, and, above these, other trees were placed in a manner which supported the roof and united the sides, the interstices being filled with boughs, or stopped with broken fragments of wood, and cemented by clay.

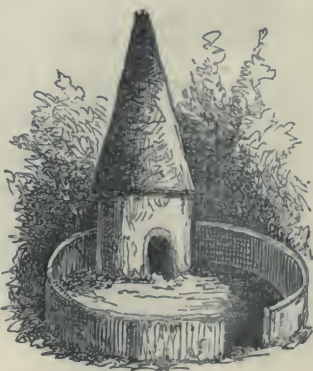


RUDIMENTARY HUT.

RUDIMENTARY CIRCULAR  
FORM.

The houses of the ancient Britons were described by Diodorus Siculus as being built of wood, the walls being made of stakes and wattles, and the thatches of either reeds or straw. Caesar describes the houses of the Britons of the south of the island as being similar to those on the opposite coast of Gaul, and Strabo represents the latter as being built of poles and wattled work, in the form of a circle, with lofty and pointed roofs. The illustration of a British town, p. 13, is based upon various highly probable evidences.

Dr. Henry carries his ingenious speculations back to a time when even the rudimentary forms of houses were unknown, and when the aboriginals had no better dwellings than thickets, dens, or caves. "Some of the subterranean, or earth houses," he says, "are still remaining in the Western Isles of Scotland, and in Cornwall."\* We obtain, from Trajan's column, the representation of a Gaulish dwelling, which supplies a valuable evidence of the character of the houses of our British



BRITISH HOUSE.

\* Since Dr. Henry's time, other subterranean habitations have been discovered in Ireland.

ancestors. It differs only from the previous illustration, and from the description given by Strabo, in having a circular instead of a conical roof. In several parts of the kingdom there yet remain traces of the foundations of British circular houses, which appear to have been raised upon circles of stones embedded in the earth.

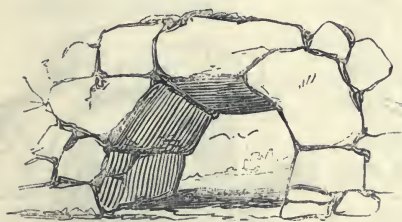


In all ages, religious and military edifices have improved greatly in advance of the domestic. Hence monuments of the former have descended to us in numerous instances, while, with the ex-

ANCIENT BRITISH HUT, AS SCULPTURED ON TRAJAN'S COLUMN.

ception of the circles of stones already alluded to, no traces of British domestic buildings can be found; and even those of the Saxons are almost extinct. The Britons, whose houses were of the most miserable description, found means to construct the great religious temples of Stonehenge and Abury, the vastness of whose blocks of stone leaves the problem of the means of their transportation still unsolved.

That the Britons had arrived at some notions of constructive



RUDIMENTARY ARCH.

masonry, is evident from their laborious formation of tombs, and of rudimentary arches, which have occasionally been found. The few remains of military architecture attributable to the Britons are serviceable in this one respect, that they throw a strong light

upon the simplicity of British art, and show that everything contributing to domestic convenience must have been of a very mean description.

As soon as the Romans determined to colonize this island, they zealously endeavoured to improve its buildings, and to raise superior edifices for public purposes. They built not only solid and convenient structures for their own accommodation, but encouraged the Britons to imitate their example. In sixteen years after London fell into the possession of the Romans, it grew to be a beautiful



and populous city. Agricola was the greatest improver of British works of civil utility. Tacitus distinctly records, that in order to induce the Britons, who led a roaming and unsettled life, and were easily instigated to war, to contract a love of peace, Agricola exhorted and assisted them to build houses, courts, and market-places.

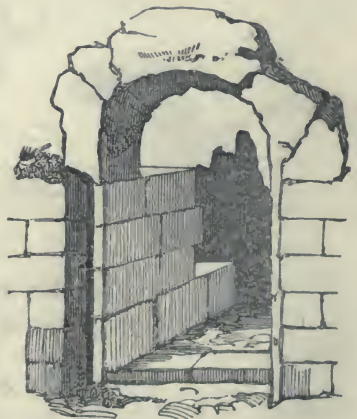


BRITISH KEEP.

And when he had succeeded thus far, he encouraged them to build edifices for ornament and pleasure, such as porticoes, galleries, baths, banqueting-houses, etc. From this time to the middle of the fourth century, architecture, and the arts allied to it, began to flourish, and the solid, convenient, and ornamental buildings, which had long been characteristic of Italy, were introduced into Britain. Every Roman colony became encompassed with strong walls, which surrounded religious temples, and palaces, courts, baths, and markets,

with other buildings, both for use and ornament. Many well-built villages, towns, forts, and stations were founded; the comparative peace of the country was for some time secured by the military wall, which extended from the north of the river Tyne to the Solway Firth; and the taste of the British became so far improved, that "this island became famous for the great number of its architects and artificers."\*

With the decline of the Roman power, and its ultimate withdrawal from Britain, came one of those terrible relapses, in which works of great utility are wrecked, and even the principles of art and the objects of improvement forgotten. During the protracted wars in



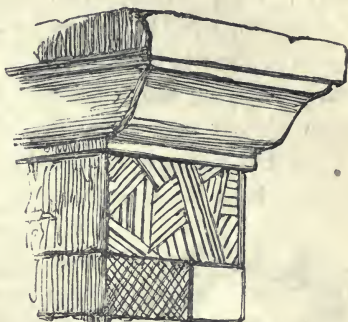
ROMAN-BRITISH WORK.

which the Britons, Picts, Scots, and Saxons engaged, many noble structures were despoiled, cities and towns depopulated, and forts

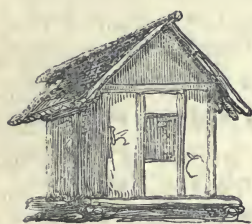
\* Dr. Henry.

and walls demolished. The features which Rome had imparted to the face of the country were almost literally swept away, and the people appear to have returned again to their barbarous habits, and lodged once more in forests, huts, and caves, like their untutored ancestors.

With the Anglo-Saxon era we therefore begin the history of architecture anew; but we shall be rewarded by a better insight into the construction of domestic buildings than that which we were able to obtain from the Anglo-Roman period.



ROMAN-BRITISH WORK.



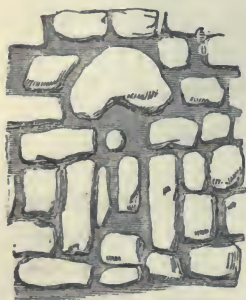
RUDIMENTARY SAXON  
HOUSE.

“It cannot be supposed,” says Dr. Henry, “that a people who wantonly demolished so many beautiful and useful structures, had any taste for the arts by which they had been erected. The truth is, that the Anglo-Saxons, at their arrival in this island, were almost totally ignorant of these arts, and, like all the other nations of Germany, had been accustomed to live in wretched hovels, built of wood or earth, and covered with straw or the branches

of trees; nor did they much improve in the knowledge of architecture for two hundred years after their arrival. During that period, masonry was quite unknown and unpractised in this island, and the walls even of cathedral churches were built of wood.” Bede, in his “Ecclesiastical History,” states that there was a time when there was not a stone church in all the land. The first cathedral of York was a wooden edifice. He mentions a stone church, to which, probably from its rarity, miraculous influences were ascribed:—“Paulinus, the first Bishop of York, built a church of stone in the city of Lincoln, whose walls are standing though the roof is fallen down; and some healing miracles are wrought in it every year, for the benefit of those who have to seek them.” It is more than probable that the first edifices said to be of stone were only partly so, their upper portions being of wood.

In the beginning of the eighth century, there were no artificers in Scotland sufficiently skilled to erect a church; for which reason Naitan, King of the Picts, earnestly entreated Ceolfred, Abbot of Weremouth, A.D. 710, to send him some masons who could build a church of stone in his kingdom, "*in imitation of the Romans,*" thereby clearly implying the deficiency of such artificers, and also that the Saxon edifices were commonly of wood.

The first attempts at masonry, on the part of the Saxons, appear to have been exceedingly rude, which is the more remarkable on



SAXON MASONRY, FROM  
BARROW CHURCH.

account of the excellent examples which the Romans had afforded. But masonry was revived, and some of the arts connected with it restored, in England, towards the close of the seventh century, by Wilfrid, Bishop of York, and Benedict Biscop, founder of Weremouth Abbey. Wilfrid caused several admirable structures of stone to be raised at York, Ripon, and Hexham. Benedict Biscop made six journeys to Rome, for the purpose of collecting books, pictures, statues, and other works of learning and art, and of persuading

artificers in various trades to remove from Italy and France, and settle in England. He obtained a grant of a considerable estate of Ecgfrid, King of Northumberland, near the mouth of the river Were, upon which he founded a monastery in the year 674. For the erection of this institution he visited France, where he collected a number of masons, and brought them over with him, *in order to build the church of the monastery of stone, after the Roman manner.* When the work had far advanced, he sent agents into France to procure some *glass makers*, a kind of artificers quite unknown in England, and to bring them over to glaze the windows of his church and monastery. The glass makers were obtained, and they not only performed the work required, but instructed the English in the art of making glass for windows, etc.

But though these arts of erecting stone buildings, and furnishing them with glass windows, were thus introduced in the latter part of the seventh century, it appears, from many incidental hints in the early historians, that stone buildings were still rare in the eighth and ninth centuries, and King Alfred found it necessary, for the repair



of the buildings despoiled by the Danes, to bring many artificers from foreign countries. Even Alfred, with the aid of foreign skill, constructed churches, and probably other buildings, of wood.

In Wales, the style of building continued down to this period to be of a very primitive description. The chief palace, where the kings, nobles, and wise men assembled to deliberate and make laws, was constructed of woven twigs, from which the bark had been peeled, which was thence called "*the white palace.*" Whoever burnt or destroyed the king's hall or palace was obliged to pay one pound and eighty pence, besides one hundred and twenty pence for each of the adjacent buildings, which were eight in number, and comprised a kitchen, chapel, granary, bake-house, store-house, stable, and dog-house. Therefore it appears that a royal residence in Wales, with all its offices, when those laws were made, was valued at £5 6s. 8d., equal to £200 of our present money.

In Scotland, about the same period, or soon after it, the art of building in stone appears to have made considerable progress, although, in 710, the Pictish king was obliged to procure stone-masons from Northumberland. Several large castles were erected, having high towers, which justly rank among the chief works of Scottish antiquity.\*

Notwithstanding the erection of these stone edifices, the chief material for building continued to be wood, and the common use made of wood down to a very recent date, probably arose more from its cheapness and lightness, and the facility by which it might be transported, than from an actual want of a knowledge of masonry, or the scarcity of artificers who could work in stone.

The prevalence of wooden buildings gave rise to great excellence in carpentry. Houses of the nobility began to be constructed with considerable ornamentation, and ecclesiastical and monastic edifices of a very improved character were raised. The following is an authentic record of particulars respecting Croiland church:—"With this wood the nave of the church of Croiland was built, and the tower constructed of strong and lofty beams, most exactly joined together, before the death of Abbot Turkitull. After the decease of that abbot, his successor, Egelric, built many beautiful edifices of the same material. In particular, he erected an infirmary for the monks, of a proper length and breadth; a chapel; a bath, with other necessary houses; a hall, and two large chambers,

\* Malcolm's Castle, Castle Chonel, Castle Tellve, Castle Troddan, etc.

for the accommodation of strangers; a new brew-house; a bake-house; and very large granaries, and stables. All these edifices were constructed of beams of wood and boards, most exactly joined, and most beautifully polished, by the admirable art of the carpenter, and covered with lead.”\*

The previous facts refer more to ecclesiastical and monastic buildings than to the humbler dwellings of the people. But the explanations which they afford were essential to the aid of a history, the materials of which are lamentably scanty. We will now turn to evidences of a different description.

The earlier illustrated manuscripts are chiefly copies of the Scriptures, or books of a religious character, and the buildings represented in these are mostly ecclesiastical. But in the illuminated romances of the thirteenth century, there are many drawings of houses and castles, to which the text furnishes useful explanations. Some recent essays in the *Archæological Journals*, founded upon a careful examination of these early illuminated manuscripts, throw considerable light upon the construction of the habitations, and the domestic usages, of the Anglo-Saxons,† the information respecting

which, in Strutt’s “*Manners and Customs*,” is singularly meagre. Strutt describes the Saxon house, illustrated in the annexed engraving, as presenting a wing constructed either of large bricks, or squared stones, and as being well covered in with slates. It is more likely that the wing was constructed of squares of wood, or was painted in imitation of such squares, and that the



ANGLO-SAXON HOUSE, FROM STRUTT.

roofing consisted not of slates, but of red tiles, which the Saxons had in common use. That architecture made considerable progress during the Anglo-Saxon period is manifest. The Saxon houses at first were of the rudest construction, but differed materially from

\* Ingulf’s “*History of Croiland*.” Dr. Henry’s “*History of England*.”

† See Mr. T. Wright’s papers in vols. i. and ii. of the “*Archæological Journal*.” Also a paper, by J. H. P., vol. v.; and another, by Mr. Wright, vol. i. of the “*Journal of the Archæological Association*.”



those of the Britons. Those of the former were square, occasionally lofty, with apertures for light and air, and in some of them chimneys. Even their rudest houses exhibited a tendency towards ornamentation, and the rough unhewn timber of which they were built was frequently painted externally with bright colours, producing a gaudy effect; and it is not improbable that the squares giving the appearance of large bricks, or blocks of stone, were painted. The Saxons progressed from miserable sheds of wood, and twisted osiers daubed over with clay, to great buildings of stone and bricks; and, though the latter were confined to public structures, their dwellings doubtless improved in a high degree.

Mr. Wright, to whose comments upon the illuminated manuscripts of the middle ages, we are now about to refer, thinks that the buildings of the Anglo-Saxons were not so mean as is commonly supposed, and that they were frequently of stone. But he does not distinctly intimate to what period of the Saxon era his remarks apply. He deduces the following descriptions from the metrical tales of the thirteenth century, at which time, he says,\* the houses of the people had in general no more than a ground floor, of which the principal apartment was the hall, into which the chief door opened, and which was the room for cooking, eating, receiving visitors, and the other ordinary usages of domestic life. Adjacent to this was the chamber, which was by day the private apartment and resort of the female portion of the household, and by night the bedroom. Strangers and visitors generally slept in the hall, beds being made for them apparently on the floor. Sometimes,



EARLY SAXON INTERIOR.

\* "Archæological Journal," vol. i., p. 213.



however, the whole family made their beds indiscriminately with strangers in the hall, for there was little delicacy of manners in those times.

A stable was frequently adjacent to the hall, probably on the side opposite to the chamber or bed-room. Behind the house was the court, which was surrounded by a fence, and included the garden, with a sheep-cot, and other outhouses; the back-door opened into this court.

The description leads us to suppose such houses to have been built chiefly of wood. Thieves entered by making holes in the walls—probably in those parts which were of plaster, between the beams—and persons within were liable to observation, from loiterers on the outside, through crevices in the walls. The houses of knights and gentlemen appear to have consisted frequently of the same number and arrangement of apartments as those already described, which comprised the dwellings of the middle and lower classes. The



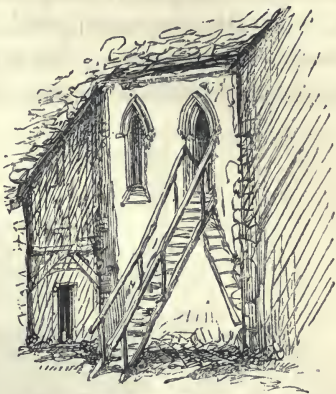
SAXON HOUSE.

annexed illustration of a Saxon house is enlarged from a seal,\* in a perfect state of preservation, attached to a deed, which bears date in the month of June, 56 Henry III., 1272. This representation clearly indicates the construction of houses with wooden beams and plaster. The central chimney forms a very prominent object. The house could not have had a second story, unless we may imagine that the chimney ran

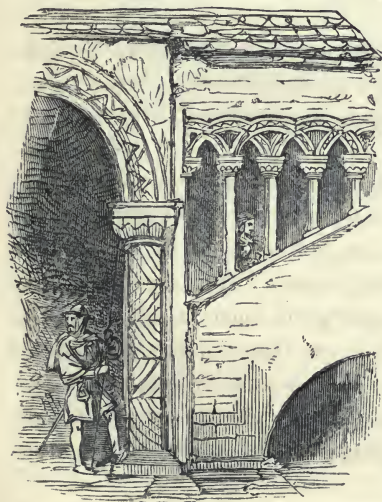
through the centre of it. There were, however, houses belonging to the richer classes which had upper floors, and were reached by flights of stairs or steps *on the outside of the buildings*. The door, it will be seen, opens outwards, and is left standing open, a sign of hospitality, which, even in troubled times, was almost boundless between those who had established friendly relations. The roof is covered with oval tiles, and exhibits two ornamented points.

\* Kindly lent to Mr. Wright by the Rev. L. B. Larking, vicar of Ryarsh, Kent.

"The stairs," says Mr. Wright, "appear to have been outside the hall, and there seems to have been a latticed window, looking from the top of the stairs into it. The expression, that they came down stairs, *and into the house*, shows that the staircase was on the outside." In one of the romances a hermit and his companion seek a night's lodging at the house of a rich but miserly usurer, who refuses them admittance, and will only permit them to *sleep under the staircase*, in what the story calls an *auvent*, or shed.\* There are many instances of such external staircases. The Mansion, or House of Boothby-Pagnell, which remains nearly in its original state, is built in the form of a parallelogram, with a gable at each end; the lower story is vaulted, and has no communication with the habitable apartment above, which was originally divided into two



STAIRCASE OF THE PRECEPTORY AT SWINGFIELD, FOUNDED BEFORE THE CLOSE OF THE TWELFTH CENTURY.



STAIRCASE PARTIALLY COVERED.

rooms, of which one only had a chimney; the entrance was by an external stair, probably moveable. In the roof was a loft, accessible only by a ladder, for there is no appearance of an internal staircase in this building, nor in any other of the same class.†

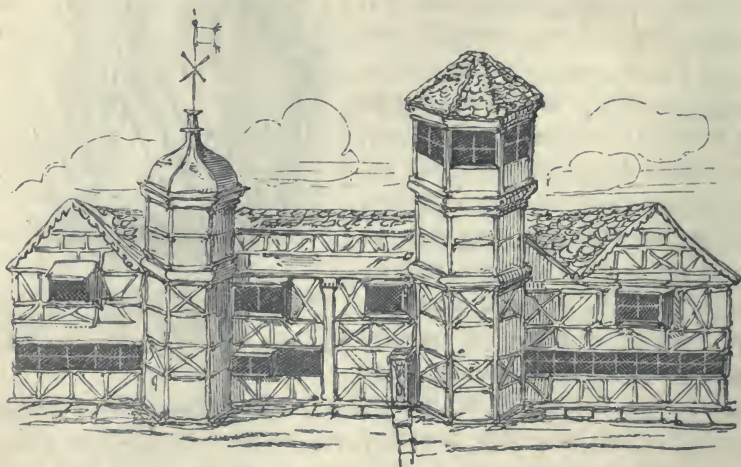
When a house possessed a second story, the upper part, or *solar*, was considered the place of greatest security, as it could only be entered by one door, which was approached by a flight of steps, and was, therefore, more readily defended.‡ Sometimes the steps were drawn up for greater safety.

\* "Archæological Journal," p. 218.

† "Pictorial England."

‡ "Archæological Journal," vol. i.

In course of time, as architecture progressed, staircases were partially covered, and when at first they were taken completely under the roof, that was accomplished, in some instances at least, by the erection of stair-towers. This is curiously exhibited in the construction of the old Manor-House, of Fawkeshall, which, though it was



THE ANCIENT MANOR-HOUSE OF FAWKESHALL.\*

erected so late as the beginning of the seventeenth century, retained the tower staircases. In the buildings of old Edinburgh, these tower-stairs to dwelling-houses were very common; we believe that several of them still exist.

The solar, according to Mr. Wright, was considered a place of honour and security for rich lodgers who paid well. According to one of the romances, three blind men came to the house of a burgher, and required to be treated better than usual. They were shown upstairs. A clerk who followed, after putting his horse in the stable, sat at table with his host in the hall, while the three guests were served "like knights," in the solar above. Stables were necessary appendages even to common houses, because at that period all householders were in the habit of letting or giving lodging to travellers, who generally came on horseback.†

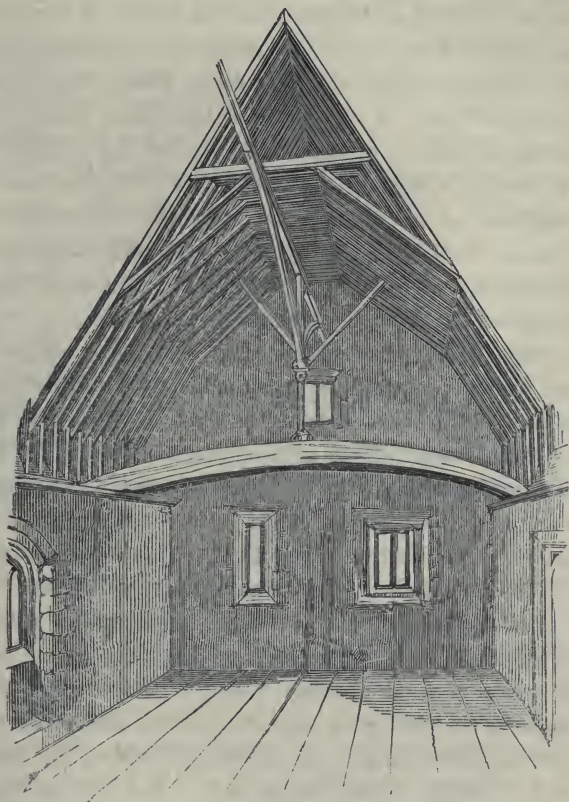
The arrangement of domestic houses continued, it would appear, the same through the twelfth and two following centuries. A house

\* From Wilkinson's "Londina." † "Archæological Journal," vol. i., p. 219.



of the better description consisted of a hall, with a building attached to each end of it. The hall was generally the whole height of the house (but occasionally there were low rooms under it), and was the usual living apartment for the whole family.

“The building at each end was divided into an upper room, called the solar, and a lower room, which at one end was usually



INTERIOR OF THE SOLAR, CHARNEY.

the cellar, and at the other the kitchen; at least, this seems in some instances to have been the case, for the exact place of the kitchen is still an unsettled point, the cooking was sometimes carried on in the hall, and sometimes certainly in the open air, as represented on the Bayeux tapestry, and in the celebrated manuscript of the fourteenth century of the ‘Romaunt d’Alexandre,’ so extensively used by Strutt in his ‘Sports and Pastimes;’ but

this was probably the case only on great and special occasions ; it could scarcely have been the ordinary practice. The upper room at one end was sometimes the chapel, but this does not appear to have ever been the general practice ; the chapel was often a small room attached to the solar.

“ The first house to which, by way of illustration, we will call attention, is situated at Charney, in the parish of Longworth, near Wantage, in Berkshire, close to the small church or chapel of Charney, but has a private chapel of its own, though the church being older than the house, it must always have been side by side with it. This may, perhaps, be accounted for by the circumstance that it was a grange belonging to the abbey of Abingdon, and the occasional residence of an abbot. In those days every manor had its grange, which was often a house of considerable importance, more what we should now call a manor house, than a mere farm house, which we now commonly understand by a grange.

“ The house consisted of a hall and two transverse wings. The two wings are nearly perfect, the front gables are in the same plane with the plane of the hall, but they extend much further backwards, and the south wing, which adjoins the churchyard, is lengthened still more by the addition of a chapel attached to the upper room at the east end, the principal front of the house facing the west. The place of the altar is quite distinct ; the piscina and locker remain ; the east window is of two lights, quite plain, the south window a small lancet with a trefoil head, widely splayed ; the roof is modern. It is separated from the large room by a stone wall, with only a small doorway through it, and is itself so made that it appears to have been merely a private oratory for the abbot, or the two or three monks who usually inhabited the house. The whole of the details of this chapel, and of the rest of the original work in the house, belong to the latter part of the thirteenth century, the end of the reign of Henry III., or the beginning of Edward I.

“ The ground-floor of the south wing is divided into two rooms, corresponding to the solar and chapel above ; the larger room is thirty feet by sixteen, and has an original fire-place in it, the head of which is of the form, so common at that period, called the square-headed trefoil ; and three original windows, two of them square-headed, the third, at the east end, a double lancet ; it has a door into the court-yard, and

had another into the hall. This room would appear to have been the kitchen; but the fire-place is not large enough for very extensive cooking. The small room under the chapel appears to have been a cellar, and is still used as such; it has no windows, only small loops.

"The solar, or larger room above, adjoining the chapel, has its original open timber roof, which, although plain, is of good character. The entrance to the solar is *by steps from the yard*, and it appears always to have been external, and in the same situation, probably by a covered projecting staircase, opposite to one of the doors of the hall, traces of which still remain.

"At Sutton Courteney, near Abingdon, is another house of about the middle of the fourteenth century, or the reign of Edward III., and in this instance the hall is nearly perfect; it measures 40 ft. by 23 ft. 10 in.; its original open timber roof remains; it is very lofty. There are two windows on each side, which have originally been lofty, with pointed heads carried up through the roof. The lights below the transoms have never had glass in them, but must have been closed with casements or shutters. \* \* \* The original entrance to the solar is by an *external covered staircase*, opposite to a door at the north-east angle of the hall; the roof is similar to the one at Charney. The building is of stone, with the exception of the upper part of the east wing, which is of wood.

"At Charney, the fire-place on the ground-floor is more perfect, and evidently original; in both cases, these rooms were probably the kitchens. In other instances the fire-places have generally been found in the upper rooms only, and not, as in these cases, on the ground-floor; no instance has yet been noticed of a fire-place on the ground-floor in the twelfth century: the finding them in the thirteenth and fourteenth, and not in the twelfth, may possibly be a mark of progress in civilization."\*

If we reflect upon the evidences we possess, paying due regard to the latest and best examples that survived the Norman spoliations, we are compelled to regard the Anglo-Saxon architecture as rude, heavy, and unworkmanlike. This seems to be acknowledged by the efforts the Saxons themselves made to cover the defects of their works, by the employment of gaudy colours externally, and ornamental hangings within. In the residences of their princes rich hangings of silk, with figures of golden birds, or Scriptural devices, wrought by the needle,

\* Contribution by I. H. P., "Archæological Journal," vol. v.



were employed for the purpose of hiding the imperfect carpentry of the walls, and to keep out the wind which entered through the crevices. The latter inconvenience led King Alfred to invent lanterns, to protect candles, by which he measured the hours, from being wasted away by drafts of wind.\* The floors were sometimes paved with encaustic tiles, but more frequently the native earth upon which they trod was covered with sand, or strewed with rushes.

We have traced the history of Anglo-Saxon architecture even through the Norman era. We must now return to the time of the Conquest, to consider the changes introduced by the Normans. Had the Saxon nobles entrenched themselves in vast feudal castles, as the Normans immediately proceeded to do, it is doubtful whether the latter could ever have established themselves in this island. The Conqueror was fully sensible that the want of fortified places in England had greatly facilitated his victory; he therefore made every exertion to strengthen his position, before the multitudes by whom he was surrounded—whom he had plundered, and now designed further to oppress—should once more gather their strength and demand their own. William excelled all his predecessors in building castles. All his early barons, and even prelates, imitated his example; and it was the first care of every one who received the grant of an estate from the crown to build a castle upon it for the defence of his residence. The disputes about the succession, in the following reigns, kept up this spirit for building great castles. William Rufus was a great builder of royal castles and palaces. In his reign the castles of Dover, Windsor, Norwich, Exeter, the palace of Westminster, and many others, were founded. Henry I. was also a great builder of castles and monasteries. But the rage for building fortified places reached its height in the turbulent reign of King Stephen, from 1138 to 1154. In this reign, every one who was able built a castle, so that the poor were worn out with the toil and burden of these buildings, and the whole kingdom was covered with castles.† It has been computed, that besides all the castles before that time in England, no fewer than eleven hundred and fifteen were raised from the foundation in the nineteen years of Stephen's reign.

The houses of the common people in the country, and of the

\* See the Section upon the "Progress of Domestic Comforts."

† Saxon Chronicle.

lower burgesses in towns and cities, were very little improved in their structure in the course of this period. Even in the capital, London, all the houses of mechanics and common burgesses were built of wood, and covered with straw or reeds, towards the end of the twelfth century.\* But the science of architecture improved in a manner which could not fail to lead ultimately to the improvement of domestic edifices. The castles, monasteries, and greater churches, raised or restored in this period, were generally covered with lead, the windows glazed, the walls neatly plastered and white-washed, on both sides. The doors, floors, and roof were commonly made of oak planks and beams, exactly smoothed and jointed, and neatly carved. In the erection of these works, architects and workmen must have acquired considerable experience and skill. Some of the architects of this period are famed in history for their works. William of Sens, architect to Archbishop Lanfranc, in building his cathedral, is said to have been a most exquisite artist, both in wood and stone. According to the testimony of Gervase of Canterbury, William of Sens made not only a model of the whole cathedral, but of every particular piece of sculpture and carving, for the direction of the workmen, and invented many curious machines for loading and unloading ships, and conveying heavy weights by land, stones being brought from Normandy. Walter of Coventry, who flourished towards the end of this period, was also an excellent architect.†

Mr. Turner attributed to the Normans the introduction of greater novelty of detail, than novelty of plan, in the erection of their buildings.‡ The amount of accommodation in a Norman house, he says, was not greater than in a Saxon house, or homestead; we behold, still, only the chief room, or *hall*, and the single bed-chamber. By the Normans, however, the principles of the Romanesque style were more generally applied to civil as well as to ecclesiastical buildings; yet, even in this respect, no considerable alteration could have occurred before the close of the eleventh or commencement of the twelfth century. It is not to be supposed, continues Mr. Turner, that the Norman invaders were attended by legions of architects and masons, who began at once to reconstruct every edifice in the island. It took William years to consolidate his power, and the only buildings of

\* Stowe's "Survey of London."

† Dr. Henry's "England."

‡ Turner's "Domestic Architecture in England."

importance erected during that unsettled period were fortresses. That, like the Saxons, the Normans continued to build, in towns, of wood, and mud-clay in timber frame-work, is beyond doubt; houses of stone were then, as they have generally been, exceptions to the general method of construction. The cost of the latter material, and the still greater expense of working it, must have necessarily limited its employment in domestic buildings to the more opulent; and in the middle ages there were comparatively few modes of displaying opulence. One of the few, however, was in the external decoration of houses—a fashion which declined in proportion as the advance of commerce and the arts enlarged the catalogue of human necessities and luxuries. Yet, although the few examples of the domestic architecture of the twelfth century which have survived to this time, exhibit, in a mutilated state, all the main features of the Romanesque style, both in its early and its transition stages, it would be a great mistake to suppose that there were in that century in London, or in any other city, many houses of a decorative character.

In the castles and fortresses of Norman origin it is very evident that their founders sacrificed convenience to security. The apart-



NORMAN HOUSE.

ments reserved for domestic purposes were cold and gloomy, the bed-chambers were few and small, the passages narrow and intricate, and the stairs, or steps, steep and dark. Even the houses of Norman construction presented a cold and defiant aspect. A general insecurity, with strong prejudices of caste and

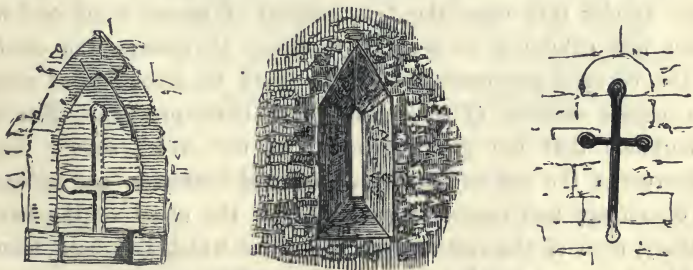
country, still shed their pernicious influence over society. In Scotland, and particularly in the border country, where society long remained in a state of incessant warfare, even the private houses continued for centuries to be erected in the form of towers,



with windows reduced to loop-holes; the ground-floor strongly barricaded, being used to secure the cattle at night, and the family dwelling in the ill-lighted apartments above, where they were sometimes obliged to shut themselves up for days together.\*

Of domestic life within these fortresses, we find an evidence in the arrangements of Lord Lovat's Castle Dunie, which prevailed as lately as the year 1740. "The residence of this powerful laird was a sort of tower, forming at best such a house as would be esteemed but an indifferent one for a private country gentleman in England. It had in all only four apartments on a floor, and none of them large. Here, however, he kept a sort of court, and several public tables, and had a very numerous body of retainers always attending. His own constant residence, and the place where he received company and dined with them, was in one room only, and that the very room in which he lodged. His lady's sole apartment was her bed-chamber. The only provision made for lodging either the domestic servants, or the numerous retainers, was a quantity of straw, which was spread every night over the lower rooms, where the whole of the inferior part of the family, consisting of a great number of persons, took up their abode. Sometimes above 400 persons attending this petty court were kennelled there."

In the construction of the Norman castles, everything essential to domestic comfort was naturally regarded as secondary to general security. The plan of these castles consisted of chief towers



NORMAN LOOP-HOLES, WHICH SERVED ALSO AS WINDOWS TO THE LOWER STORIES OF PRIVATE HOUSES.

which were denominated "keeps," and the objects kept in view in the erection of the castles were—to render the entrances imposing and impregnable; to secure the garrison, and enable them to annoy the besiegers; to give the strongest part an appearance of weakness.

\* "Pictorial England."

in order to mislead the besiegers; to put their prisoners, provisions, and implements of war out of the reach of danger; to convey the engines of war to any place of the castle with ease and expedition; to communicate intelligence in a moment to any part of the building; to provide secret passages of escape when successfully attacked; to ensure a constant and certain supply of water, removed from the possibility of its being cut off by the enemy; to convey away smoke and impurities; to provide a safe habitation for the lord and his family. To accomplish some of these ends, the principal tower was divided within into two equal parts by a thick partition of wall-masonry, from the bottom to the top. The well for supplying the garrison with water was under the foundation of this partition-wall, and the pipe of it was carried up in the middle of the wall to the leads of the castle, where the pulley for drawing water was fixed. The people on each floor had access to the pipe of the well for furnishing themselves with water, by a small arched opening in the partition-wall. From the ground-floor to the water, little square cavities were cut in the sides of the pipe, at proper distances, by which a person might descend to cleanse the well. It seems to be impossible to invent a more effective method than this to prevent the garrison from being deprived of water; the contrivances to answer other purposes were no less ingenious.

When we consider what must have been the inconveniences of domestic life within these great and gloomy fortresses, we shall little wonder that upon the first interval of repose from civil wars, there was exhibited a general tendency to enlarge the comforts of the baronial residences, so far as could be accomplished without the positive sacrifice of safety, and of military prestige. Nor is it remarkable that the growing power of the crown should display a distrust of the vast and numerous baronial fortresses, and endeavour to discourage and control them. Before the close of the twelfth century, most of the castles, especially those which had been founded in the reigns of Stephen and of Henry II., were dismantled, and some of them razed to the ground. In the reign of Henry III., licenses to embattle manor-houses were frequently granted. Thus, early in the thirteenth century, there commenced a new order of fortified edifice, from which we derive the Baronial Halls, of which so many interesting monuments remain.

In these new structures we pass from the darkness and coldness



of the Norman castles, to those scenes of festivity which supply the warmest pictures of the domestic history of our ancestors. The chief halls were erected upon a gigantic scale, and adorned with a degree of magnificence. They were still mainly constructed of wood, being built of massive beams of oak, naturally curved, and of which each pair seems to have been sawed out of the same trunk. These spring from the ground, and form a bold Gothic arch overhead; the spars rest upon a wall-plate, as that is again sustained by horizontal spars, grooved into the principals. It was then of no importance that such erections consumed great quantities of the finest ship-timber; and, indeed, the appearance of one of these rooms is precisely that of the hull of a great ship inverted, and seen from



ARRANGEMENT OF A MEDIEVAL HALL.

A, The Fire.

B, Gallery for Musicians, etc.

C C C C C, Tapestries—Hangings.

D, Open roof through which the  
smoke escaped.

E E E, Doors.

within. Specimens of this most ancient style, in perfection, were the old hall of the manor-house at Samlesbury, and the Lawsing Stedes Barn, at Whalley. Here, instead of walls, there were nothing but oak boards fixed diagonally, like a Venetian blind. The hall at Ratcliff supplies a specimen of the time of Henry IV. The style



of architecture in wood evidently kept pace with that in stone; and when, in the time of Henry VII., the arch in stone-work became broader, and more depressed in the centre, a corresponding change was introduced in our ancient timber-buildings. Wooden pasterns, indeed, still descended to the ground, but they were now become perpendicular, square, and fluted. From the top of these, elegant and ornamental springers received horizontal roof-beams, while all was still open to the roof above, and the rafters continued to rest on a wall-plate. Thus, the idea of a complete frame, independently of the walls, was still preserved; but the low basement story of stone, still to be observed in our most ancient buildings, now advanced to the square, though the cross-pikes are generally of wood. This precisely describes the hall of Little Milton, and another noble specimen of somewhat later date, the west wing of Samlesbury Hall, built by Sir Thomas Southworth, 1532, of which the outer wall, however, is of brick, and one of the earliest specimens of the employment of that material. The wood used in the construction of this last mansion, must almost have laid prostrate a forest; and, while the principal timbers were carved with great elegance, and the compartments of the roof painted with figures of saints, the outsides of the building being adorned with profile heads of wood, cut in bold relief, within huge medallions, it is curious to observe that the inner doors are without a panel or a lock, and have always been opened, like those of modern cottages, with a latch and string. The general decay of native wood occasioned a gradual disuse of this material in buildings, about the latter end of Henry VIII.'s time. The first instance of an entire hall-house of brick and stone, is Stubbley, near Rochdale, unquestionably of that period; and in the reign of Elizabeth, which was a new era in domestic architecture, numbers of old timber-halls having gone to decay, were replaced by strong and plain mansions of stone, yet remaining.\*

In the brief but interesting "Dissertation on the Origin and Progress of Domestic Architecture," appended to "Whittaker's History of Whalley"—from which we have just quoted—the dwellings of our forefathers are arranged according to the descending orders of society, and the successive ages. This arrangement, with some modifications and additions, we will adopt. The classification is as follows:—

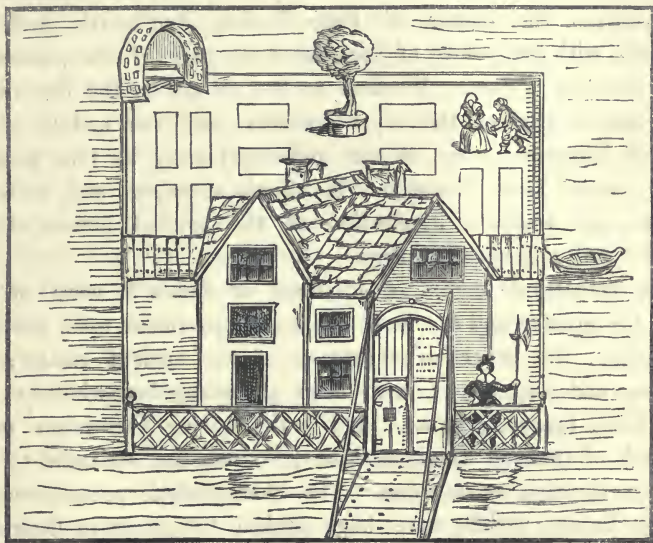
1. The castle;
2. The castlet, keep, or tower;
3. The unembat-

\* Whittaker's "History of Whalley."

tled manor-house ; 4. The large and small embattled mansions of the time of Elizabeth, or James I. ; 5. The ordinary hall-house ; 6. The farm-house\* ; 7. The cottage ; 8. The storehouses, vaults, cellars, booths, stalls, and shops of the trading classes.

Respecting castles, which are excepted from our subject, enough has already been said.

With regard to castlets, keeps, and towers, these were common to times and localities, especially to border counties, marked by deeds of turbulence and bloodshed, when family feuds often ended in slaughter. The lord of a manor, or a considerable landowner, not



MOATED MANOR-HOUSE, WITH DRAW-BRIDGE.

being in a position to support a castle, and a large number of retainers would frequently deem himself unsafe in the protection of an ordinary dwelling-house, even against a neighbour. Not to be wholly without defence, he would erect one of these minor fortresses in the neighbourhood of his dwelling. Buildings of this description remained upon the Scottish Borders long after they were abandoned in the more settled districts. They may be described generally as consisting of a single tower of several stories, contrived for the reception of cattle beneath and a family above, and well calculated for resistance by a small number of defenders against a sudden assault.

Of the unembattled manor-houses, with whatever material these mansions were constructed, all agreed in one particular, that they surrounded a quadrangle, and were generally defended by a moat. The last precaution was substituted for the want of strength in their walls and gates. This arrangement was adopted in all erections of which the object was not so much defence as sequestration and partial confinement. The squares of these buildings included the barns, stables, and other offices.

There is a curious illustration of a moated manor-house in Wilkinson's "Londina." The origin of this house, named "Holland's Leaguer," is involved in some obscurity. It was the manor-house belonging to the manor of Paris-Garden, Southwark, and was anciently, with the estate of Paris-Gardens, part of the possessions of Bermondsey Abbey. It came to the crown on the dissolution, and remained part of the royal domains until the middle of the reign of Elizabeth, when it was exchanged away by that princess to her cousin, Lord Hunsdon. It affords a curious, and, so far as its plan, an accurate illustration of the moated houses of the fifteenth and sixteenth centuries.

The embattled houses of Elizabeth or James I. were of two kinds, the greater and the less; one, an improvement upon the rude quadrangle; the other an expansion of the ancient castlet; one luminous and magnificent, with deep projecting bow-windows; the other lofty, square, compact; and both proving themselves to be the work of tranquil times, at liberty to sacrifice strength to convenience, security to sunshine. The characteristic accompaniments of these houses within, were huge arched fire-places in their halls and kitchens; chimney-pieces in their "chambers of state," richly carved, and adorned with armorial bearings of wood, stone, or alabaster, raised hearths, long and massy tables of oak, bedsteads of the same, frequently inlaid with arms, cyphers, scrolls, etc., of white wood, and from their bulk calculated to last for centuries; portraits upon boards; and, in short, a whole system of internal ornament and accommodation, intended to resist the ravages of time, without an idea of the revolutions of war or of fashion. One apartment, seldom omitted in houses of this rank and date, but never found in those of higher antiquity, was a long gallery for music and dancing, sometimes 150 feet long—a proof that "the hall" was now beginning to be deserted. At all events, the practice of dining in these great



apartments, at different tables, according to the rank of the guests, was scarcely continued below the Restoration. Till that time, however, the old train of "servers and senescalls" were mostly kept up. But the general interruption of old hospitality in great houses, occasioned by the civil wars, and afterwards the introduction of foreign manners, in consequence of the return of the royal family, and their numerous dependents, occasioned a total revolution in domestic economy, and consequently in architecture.

The great hall of Lambeth was, indeed, rebuilt by Archbishop Juxon, who, perhaps, thought the old style best became the gravity of an archiepiscopal palace, but it was probably the last specimen; and, in the reign of Charles II., the sash-window, and model of the square modern house, were first imported from Italy. As our old mansions decayed, they were rebuilt after the new form; and those which remain have been preserved, not so much by the care as by the desertion or extinction of the families to which they belonged. In addition to this change of style without, the introduction of mahogany, about a century and a-half ago, formed a new era in the history of internal decoration.

The ordinary hall-house was a form of very high antiquity, consisting of a thorough lobby, a hall, with a parlour beyond it on one side, and kitchens and offices on the other. In this respect no change took place upon the general erection of brick or stone houses in the reign of Elizabeth. The frame of the building rested upon crooks of the oldest form; the windows were apertures about six inches wide, not originally intended for glass; the floors of clay, the chimney wide and open, the partitions of rude oak; the apartments, one only excepted, long and narrow. So lived our yeomanry and smaller gentry, and such probably continued down to the beginning of Elizabeth's reign, when the forests being exhausted, and the old houses decayed, and a period of great tranquillity ensuing, a general spirit of brick and stone building commenced. In the new structures, the original form was retained, though with great enlargements. On the right of the entrance was the hall, lighted usually by one great *range* window, a massy table beneath; at the lower end a gallery for music, or to connect the apartments above; and a fire-place, embracing in its ample space almost all the width of the room, the Christmas scene of rude and boisterous festivity; beyond was uniformly a parlour, where, till the days of our grandfathers, on a ground-floor, paved with

stones, disdaining, or unacquainted with, the accommodation of carpets, and upon an oaken bedstead, massive as the timbers of a modern house, slept the hardy master and mistress. Here their offspring first saw light; and here, too, without a wish to change their habits, fathers and sons in succession resigned their breath.\* In the windows of such houses, and their contemporary mansions of the rank immediately above them, are often found remains of painted glass, in a style which seems to have been fashionable about the beginning of the last century. They consist of arms, cyphers, figures of animals, personifications, etc., of which the drawing is extremely correct, but the colours faint and dingy, very unlike the deep and glowing tints of the foregoing centuries. To complete the picture of these ancient and interesting mansions, we have to add huge barns, long and low, with bending roofs; high stone walls, gray with mosses and lichens; courts and gardens, adorned with ferns, or other venerable evergreens, and backgrounds formed of aged oaks, ashes, and sycamores, frequently overhanging deep glens, and inhabited by colonies of rooks.

Let it not be thought a trifling or impertinent digression (remarks Whittaker), if we now take a view of the interior economy of the families who inhabited these houses, from the reign of Elizabeth down to the civil wars in the last century, or a little later. They were precisely in that station which James I. pronounced to be the happiest in human society, *i. e.*, beneath the rank of a sheriff, and above that of a constable. Their system of life was that of domestic economy in perfection. Occupying large portions of his own domains, working his land by his own oxen, fattening the aged, and rearing a constant supply of young ones; growing his own oats, barley, and sometimes wheat; making his own malt, and furnished often with kilns for the drying of corn at home, the master had constant and pleasing occupation in his farm, and his cottagers regular employment under him. To these operations the high troughs, great garners, and

\* Whittaker indulges in these reflections, in which we find a warm affection for "the good old times," and a disparagement of modern refinements:—"It is not unusual to see one of these apartments transformed into a modern drawing-room, where a thoughtful mind can scarcely forbear comparing the present and the past; the spindled frippery of modern furniture, the frail but elegant apparatus of the tea-table, the general decorum, the equal absence of everything to afflict or to transport, with what has been heard or seen or felt within the same walls, the logs of oak, the clumsy utensils, and, above all, the tumultuous scenes of joy or sorrow called forth perhaps by the birth of an heir, or the death of a husband, in minds little accustomed to restrain their passions."

chests, yet remaining, bear faithful witness. Within, the mistress, her maid-servants, and daughters, were occupied in spinning flax for the linen of the family, which was woven at home. Cloth, if not always manufactured out of their own wool, was purchased by wholesale, and made up into clothes at home also. They had much plate and few books, and those generally theological. Yet the grammar-schools, not then perverted from their original purpose, diffused a general tincture of classical literature. Their simple way of life required little arithmetic, and they kept a rude kind of day-books (from some of which accompanied with ancient inventories, this account has been collected) and in the old figures, Arabic numerals not having been generally introduced. The fortunes of the daughters were partly paid in cattle, or even oatmeal; and the wardrobe of a wife, which was to last for life, was conveyed by oxen, in a bride-wain much adorned, and a chest enriched with carving.

This is the pleasing side of the picture. On the other hand, the men were rough, boisterous, and quarrelsome. Their feasts, though generally regulated by the festivals of the Church, were banquets of Lapithæ and Centaurs; but it required the economy of half a life to enable men in this rank to afford to die, for their funerals were scenes of prodigality not to be described. Their intemperance, though enormous at some seasons, was rather periodical than constant, their farming occupations ordinarily keeping them employed. They had, however, ordinarily no planting, since their oak-woods mostly grew up of themselves; neither had they gardening nor music, one of which a country gentleman now requires. For fishing they had few opportunities. Shooting flying was unknown, though nets were much in use. If they addicted themselves to hunting, which is always a social diversion, they grew reckless and sottish, and their estates, not of magnitude enough to bear neglect, went to ruin.

Next in the scale is the old farm-house, supported on crooks,\* low, dark, and picturesque. Great numbers of these appear to have been rebuilt early in the last century, and they were evidently abridgments of the hall; for in these the lower wing is completely cut off, the hall has become a house, but the parlour still maintains its relative situation and ancient use. In these dwellings, driven as to their last retreat, are still many remains of ancient furniture, which have seen better houses and better days; the long table, the carved "armary," the dated

\* By crooks are meant arched timbers, ascending from the ground to the roof.



wardrobe, all, when under the hands of a good housewife, bright and clean; and here "the smoky rafters," loaded with winter provisions, and the great chests rammed with oatmeal, which is calculated to outlast the year, fill the mind with pleasing ideas of rustic plenty, and ancient simplicity.

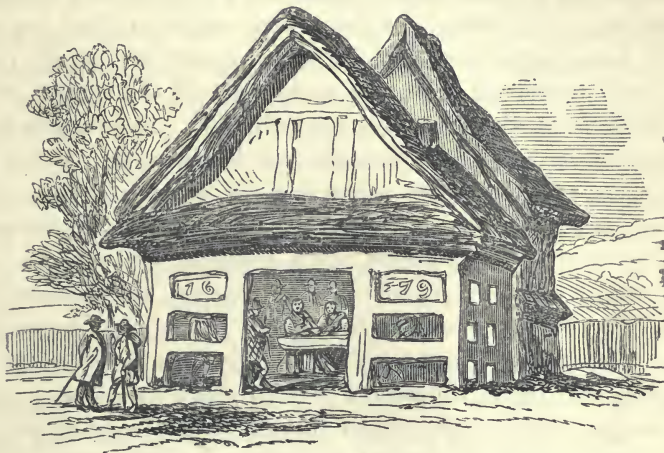
Last of the rural edifices is the cottage. These are single apartments, without chambers, open to their thatched roofs, and supported upon crooks. We have traced the history of these from the wattled huts of the Britons, to the wooden houses of the Saxons, and shall have to revert to them again in our remarks upon modern cottage architecture.

With regard to the early stores of the manufacturing merchant and trading classes, we may here observe that at a time when property was insecure, and the state of society turbulent, nothing analogous to our modern shops existed. The religious and baronial establishments, and the extensive households of the gentry, were supplied wholesale by dealers who kept their wares in well-guarded cellars and store-houses; while the occasional requirements of smaller households were supplied by periodical fairs, or hawkers travelling the country. The few shops which had then commenced, were little more than cells, where workmen followed their handicraft, and vended the produce of their own industry. The words *stall*, *booth*, and *shop* are derived from Saxon roots, and signify severally, the forepart of a shop or counter, a shelter or hovel, and an office for the sale of wares, the latter being a junction of the two former, already described. The nuisance of stalls thronging the kerb of the narrow and crowded streets of Old London, was the subject of complaint from an early period, and enactments were made at different times, from the fourteenth century downwards, for their suppression.\* We shall, however, enter morefully upon the history of shops and trading-establishments when we come to the examination of street architecture.

There is one description of edifice, not included in the previous enumeration, to which we may as well now refer. This was the open court in which law proceedings were conducted. The annexed engraving illustrates the court-house of Godmanchester, which continued "open" until the passing of the Reform Bill. Causes "tried in open court" is a phrase familiar to all; but in ancient times the courts were literally "open." The court of Godmanchester, which is a type of

\* Archer's "Vestiges of Old London."

others of its period, remained perfectly open until the memorable year 1832, when, for the comfort and convenience of a new race of justices unaccustomed to privations, it was bricked and plastered in. Here, until within our own time, was justice administered openly as in the earliest ages, when a broad tree frequently formed the sole



OPEN COURT, OR COURT OF PIE-POWDER.\*

shelter for judge and people. Down to a comparatively late period, the law courts were thus held both in Guildhall and Westminster Hall, in London. In a much earlier age Parliament was similarly seated; Richard II. erected for the members a temporary wooden house, while rebuilding Westminster Hall, and this house was open, on all sides to the weather, and to all men; the members being protected by 4000 archers, placed round them by the king, "to secure freedom of debate." Such open meeting-houses were by no means uncommon in the olden time.†

Blackstone, in his Commentaries, says—"The lowest, and, at the same time, the most expeditious court of justice known to the law in England is the Court of Pie-powder, *curia pedis pulverizati*, so called from the dusty feet of the suitors;" or, according to Sir Edward Coke, "because justice is there done as speedily as dust can fall from the foot."‡ Stowe writes, that "opposite the Bishop of Coventry's Inn

\* From Hall's "Baronial Halls."

† Archer's "Vestiges of Old London."

‡ See the Section upon "The Progress of Civil Jurisprudence."

in the High Street (now the Strand), stood a stone cross, where, in the year 1294, and divers other times, the justices itinerant sat without London." The courts of Pie-powder were of two kinds—those having absolute jurisdiction to settle general and important causes, and those having immediate and local jurisdiction over disputations and causes arising at markets and fairs, and which required immediate settlement. In the latter, two things were requisite: First, the court was to be for matters arising in the market or fair; second, the causes were to be determined during the continuance of the market or fair, and by the court annexed to such market or fair. These courts appear to have taken their origin from the old British courts, which were held in the open air, where judges presided to minister justice *while dust was on the feet*. The courts of absolute and general jurisdiction arose from the Saxon institution, which appointed twelve of the most eminent and grave men to ride different circuits, that justice might not be impeded to the meanest individual. Hence arose judges itinerant. We will merely add, upon this subject, that when the taste for grandeur and luxury introduced covered places for deciding causes, the superior court of Pie-powder lost its ancient consequence, and, from being a court of general judicature, it degenerated into the inferior court which, for some time afterwards, continued to hold its open sittings for the speedy and sudden despatch of differences arising in markets and fairs, for the benefit of merchants and tradesmen; for determining also all doubts and questions, then and there arising, respecting sales and contracts made within, and during the time for which the market or fair is held, and not for matters arising otherwise than in the market or fair.\*

The account of "the manner of building and furniture of houses," given in Harrison's Introduction to "Hollinshed's Chronicle," corroborates, in all material points, the history we have given, while it adds many interesting details of a more modern date (1586-7), which cannot be omitted:—"The greatest part of our buildings," says Harrison, "in the cities and good townes of England consisteth onlie of timber, for as yet few houses of the commonaltie (except here and there in the west countrie townes) are made of stone. \* \* It is not in vaine in speaking of building to make a distinction between plaine and woodie soils: for as in these, our houses are commonlie strong and well timbered, so that in

\* Wilkinson's "Londina."



manie places, there are not above foure, six, or nine inches between stud and stud; so in the open and champaigne countries they are inforced for want of stufte to use no studs at all, but onlie frank posts, raisins, beames, pricke posts, groundsels, sumners (or dormants), transoms, and such principals, with here and there a girding whereunto they fasten their splints or ravel, and then cast it all over with thick claie to keepe out the wind, which otherwise would anoie them. Certes this rude kind of building made the Spaniards in Queene Marie's dayes to wonder, but cheeflie when they saw what large diet was used in manie of these so homlie cottages, in so much that one of no small reputation amongst them said after this manner: These English (quoth he) have their houses made of sticks and dirt, but they fare commonlie so well as the king. Whereby it appeareth that he liked better of our good fare in such coarse cabins than of their owne thin diet in their princelike habitations and palaces. In like sort, as everie countrie house, is thus appavelled on the outside, so is it inwardlie divided into sundrie roomes above and beneath; and where plentie of wood is they cover them with tiles [evidently, from this, *wooden tiles*]; otherwise with straw, sedge, or reed, except some quarrie of slate be neere at hand, from whence they have for their monie so manie as may suffice them.

"The claie wherewith our houses are impanelled is either white, red, or blue, and of these the first doth participat verie much with the nature of our chalke, the second is called lome, but the third soonest changeth colour, so soone as it is wrought, notwithstanding that it looke blue when it is throwne out of the pit. Of chalke also we have our excellent Asbestos, or white lime, made in most places, wherewith being quenched we strike over our claie workes and stone walls, in cities, good townes, rich farmers' and gentlemen's houses: otherwise in steed of chalke (where it wanteth, for it is so scant that in some places it is sold by the pound) they are compelled to burne a certain kind of red stone, as in Wales, and else where, other stones and shells of oysters and like fishe found upon the sea coast, which being converted into lime doth naturallie (as the other) abhorre and eschew water whereby it is disolved, and neverthelese desire oile, wherewith it is easilie mixed, as I have seen by experience. Within their doores also such as are of abilitie doo oft make their floores and parget of fine alabafter burned, which they call plaster of Paris, whereof in some places we have great plentie, and that verie profitable against the rage of fire.

"In plaftering likewise of our fairest houses over our heads, we use to laie first a laire or two of white mortar, tempered with hair upon laths, which are nailed one by another (or sometimes upon reed or wickers, more

dangerous for fire, and made fast here and there with saplathes for falling downe), and finallie cover all with the aforesaid plafter, which beside the delectable whiteness of the stufte it selfe, is laid on so evenlie and smoothlie, as nothing in my judgment can be done with more exactnesse. The walls of our houses on the inner sides in like sort be either hanged with tapestrie, arras worke, or painted cloths, wherein either diverse histories, or hearbes, beasts, knots, and such like are stained, or else they are seeled with oke of our owne, or wainscot brought hither out of the east countries, whereby the roomes are not a little commended, made warme, and much more close than they otherwise would be.

“As for stooves we have not hitherto used them greatlie, yet do they now begin to be made in diverse houses of the gentrie and wealthie citizens, who build them, not to worke and feed in, as in Germanie and elsewhere, but now and then to sweat in, as occasion shall need and require it. This also hath been common in England, contrarie to the customes of all other nations, and yet to be seene (for example in most streets of London) that manie of our greatest houses have outwardlie beene very simple and plaine to sight, which inwardlie have been able to receive a duke with his whole traine, and lodge them at their ease. Hereby moreover it is come to passe, that the fronts of our streets have not been so uniforme and orderlie builded as those of foreigne cities, where (to say the truth) the other side of their mansions and dwellings have oft more cost bestowed upon them than all the reste of the house, which are often verie simple, and uneasie within.

“Of old time our countrie houses, insteed of glasse, did use muche lattise, and that made either of wicker or fine rifts of oke in chequerwise. I reed also that some of the better sort, in and before the time of the Saxons (who notwithstanding used some glasse also since the time of Benedict Biscop the monke, that brought the feat of glasing first into this land), did make the panels of horne instead of glasse, and fix them in wooden calmes. But as horne in windows is now quite laid downe in everie place, so our lattises are also growne into lesse use, because glasse is come to be so plentiful, and within a verie little so good and cheape, if not better than the other.

“Heretofore, also, the houses of our princes and noblemen were often built of berill\* (an example whereof is yet to be seene in Sudeleie Castell), and in diverse other places with fine cristall, but this especiallie in the time of the Romans, whereof also some fragments have been taken up in old ruines. But now these are not in use, so that only the clearest glasse is

\* A description of crystal.







BRAMHALL HALL, CHESHIRE.



BAY-WINDOW IN BRAMHALL HALL, CHESHIRE.

(From Nash's "Mansions of England.")

most esteemed. \* \* \* Moreover the mansion houses of our countie townes and villages (which in champaigne ground stand altogether by streets, adjoining one another, but in woodland soiles dispersed here and there, each one upon the several grounds of their owners) are builded in such sort generallie, as that they have neither dairie, stable, nor brue-house annexed unto them under the same rooffe (as in manie places beyond the sea, and some of the north parts of our countie) but all separate from the first, and one of them from another. And yet, for all this, they are not so farre distant in sunder, but that the goodman lying in his bed may lightlie heare what is done in eache of them with ease, and call quicklie unto his meinie if anie danger should attack him.

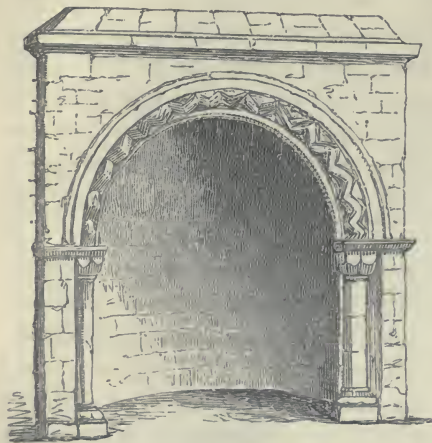
"The ancient manours and houses of our gentlemen are yet and for the most part of strong timber, in framing whereof our carpenters have been and are worthilie preferred before those of like science among all other nations. Howbeit such as be latelie builded are commonlie either of bricke or hard stone, or both; their roomes large and comelie, and houses of office further distant from their lodgings. Those of the nobilitie are likewise wrought with bricke and hard stone, as provision may best be made; but so magnificent and statelie, as the basest house of a baron doth often match in our daies with some manours of princes in old time."

Connected as the fire-place and chimney are with the most treasured moments of domestic happiness, their history forms an interesting episode in our present subject.

The absence of chimneys from the illuminations of the tenth and eleventh centuries may be attributed to the fact, that the manuscripts were translations or copies of the sacred texts, and that the illuminations thereto were designed to illustrate Scripture history, and not to portray the domestic life of the period. Most of the buildings depicted upon the early illuminations consist of structures in the form of a parallelogram, open at one end, but hung with drapery, the curtains of which being drawn aside, revealed an altar, and a lamp suspended over it. By the side of each of those buildings stood a small wing, probably the dormitory for a priest. That such was not the structure of the Anglo-Saxon churches scarcely requires argument. The other buildings which appear upon the illuminations consist, to a very great extent, of open corridors and arcades—a style quite inconsistent with the necessities of the British climate, and evidently indicating, on the part of the illuminators, an attempt to give an idea of Eastern structures. So far



as the details are concerned—the tiles, doorways, pillars, porches, and windows, and other parts of Saxon buildings—these manuscripts bear valuable testimony, and there appears little change, in these particular,



FIRE-PLACE, ROCHESTER CASTLE.

in the illuminations from the tenth to the fourteenth centuries. The metrical romances of the latter period enter more into the details of domestic life, and in these chimneys appear. It seems therefore probable that in Saxon houses there were *central* chimneys, as represented in the illustration, p. 214, the roof of the house there illustrated exhibiting a strictly Saxon character; and the true prototype of our modern flues probably arose with the

construction of Norman castles, which, consisting of several galleries or stories, rendered the open and central chimney impracticable. Fire-places were then necessarily removed from the central situation to apertures in the walls, and the smoke was allowed to escape through a stone vent having for its outlet a loophole, since a larger opening was incompatible with the sought-for security. The elongation of the flue soon suggested itself, as a means of improving the fires, and purifying the air of confined apartments; then commenced the chimney-shafts, which, in various improved forms, prevail to the present day.

Understanding the construction and uses of these chimneys, as the Normans did, it is remarkable that builders of the middle ages preferred the central fire-places for their halls, leaving the smoke to find its way through the open lantern, or to soil the arras and blacken the roof before escaping.

Yet there are instances of chimneys being constructed, and of houses being altered or improved by them. In



CHIMNEY OF  
AYDON CASTLE,  
NORTHUMBER-  
LAND, 1280.



drawings of the time of Henry III., cylindrical chimneys are represented rising considerably over the roof, and orders to "raise" the chimneys of the king's houses were frequent in this reign. These alterations were probably made in the smaller and upper apartments, the central fire-places still being retained in great halls.

Roberte Langelande, in his "Visions of Pierce Plowman," written "in the Tyme of Kynge Edward the Thyrd," regrets the neglect of the genial fire in the hall, and looks upon the resort to a private apartment with a chimney as a selfish gratification:—

"Ellengeis\* the hal, every day in the weke,  
There the lorde ne ladye, liketh not to sytte,  
Now hath eche ryche a rule, to eaten by himselfe  
In a privi parler, for poore men's sake,  
Or in chamber with a chimney, and leave the chiefe hall,  
That was made for meales, men to teate† in,  
And all to spare to spende, that spoyl shall another."

The central fire-places in the better class of dwellings were slightly elevated upon a kind of reredosse, and the burning wood was raised by iron fire-dogs, sometimes of plain form, in other cases ornamental. In the dwellings of the poorer people, a few stones, grouped upon the native earth, constituted the only fire-place.

The form of the curfew, which was used in the time of the Normans, shows that fires were made against the walls, and, therefore, ventilated by flues or chimneys. For the central fires there were probably curfews of other forms, since the Conqueror imposed upon his subjects



REREDOSSE AND FIRE-DOGS.

the extinction of all fires at the ringing of a certain bell, hence called the "curfew bell." Whether a bell was rung for the express purpose, or that the signal was to be taken from the vesper bells of the convents, is a matter of doubt. The employment of the curfew was imposed as a precaution against fires, houses being chiefly built of wood, and was not peculiar to this country, nor to the

\* Forlorn.

† Treat.

dominions of the Conqueror.



CURFEW.\*

That it was many centuries before chimneys became general, may be gathered from the incidental testimony of numerous writers. Leland, writing in the sixteenth century, expresses surprise at a chimney which he found in Bolton Castle, and which he says “was finiched or Kynge Richard the 2 dyed. One thyng I much notyd in the hawle of Bolton, how chimeneys were conveyed by tunnels made on the syds

of the walls betwixt lights in the hawle, and by this means, and by no covers, is the smoke of the harthe in the hawle wonder strangely conveyed.”

Harrison, writing at the close of the same century, says—“There are old men yet dwelling in the village where I remaine, which have noted three things to be marvellouslie altred in England within their sound remembrance: one is the multitude of chimnies latelie erected, whereas in their young daies there were not above two or three, if so manie, in the most uplandish townes of the realme (the religious houses, and manour places of their lords alwaies excepted, and peradventure some great personages), but ech one made his fire against a reredosse in the hall, where he dined and dressed his meat.”†

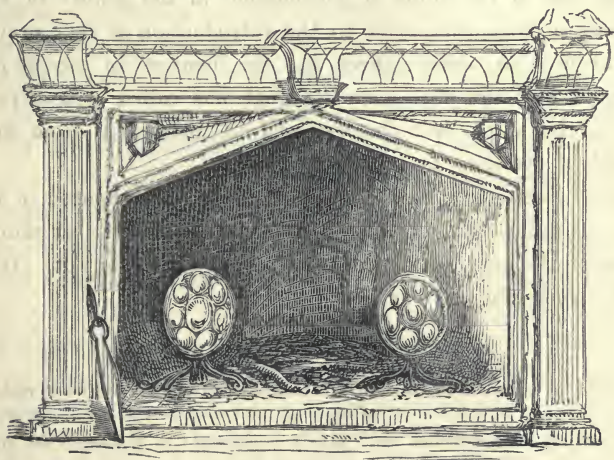
From the reign of Henry VIII., when the use of bricks for building was revived, chimneys began to multiply, and some of them were highly ornamented. A tax was imposed upon every fire-place, or hearth, in England, in the reign of Charles II. This has been improperly called a “tax on chimneys;” it was, in fact, levied upon fire-places, or hearths, whether accompanied by chimneys or not. It yielded two hundred thousand pounds, and caused great discontent among the poorer orders of people,‡ which a tax upon chimneys would not have done at that time. The poorer householders were frequently unable to

\* This utensil is called a curfew, or *couvre-few*, from its use, which is that of suddenly putting out a fire. The method of employing it was thus:—The wood and embers were raked as close as possible to the back of the hearth, and then the curfew was placed over them, the open part placed close to the back of the chimney; by this contrivance, the air being almost totally excluded, the fire was of course extinguished.—Grose’s “Antiquities.”

† Introduction to Hollinshed.

‡ Macaulay’s “England.”

pay their hearth-money to the day. When this happened, their furniture was distrained without mercy, for the tax was farmed, and a farmer of taxes is, of all creditors, proverbially the most rapacious. The collectors were loudly accused of performing their unpopular duty with harshness and insolence. It is said that as soon as they appeared at the threshold of a cottage, the children began to wail, and the old women ran to hide their earthenware. Nay, the single bed of a poor family had sometimes been carried away and sold.\* In the reign of William and Mary, the House of Commons resolved that the collection of hearth-money was a great oppression to the poorer sort, and a badge of slavery upon the whole people, exposing every man's house to be entered into and searched at pleasure by persons unknown to him. This tax was therefore abolished. By the reign of Elizabeth chimneys had come to be appreciated. When ladies paid visits to their friends, if they could not be accommodated with rooms provided with chimneys, they were frequently sent out to other houses, where they could enjoy that luxury.† Even at the close of the seventeenth century, chimneys were not universal. At that period there were "windows



FIRE-PLACE OF KNOWLE HALL, KENT.

every where glazed, not made of paper or of wood. Chymnies in *most places*, no stoves."

In the Elizabethan halls, when the central reredosse was superseded in all new structures, fire-places assumed considerable size and

\* Macaulay's "England."

† Chamberlaine's "Present State of Britain," 1700.



elegance. The fire-dogs were ornamental, frequently faced with highly-polished metal, which reflected the brilliancy of the flames, and radiated a generous heat, or consisted of casts of elaborate moulding in metal. Armour, weapons, banners, and bucks'-horns were tastefully grouped over the massive mantels, or they were surrounded by elaborate carvings of family busts and shields.

The introduction of coals, the exact date of which is uncertain, must have contributed to the increase of chimneys. Before coals were employed as fuel, they were used for denoting land-marks, being black and imperishable. Whether they were employed for fires by the Romans in Britain has been a matter of antiquarian discussion. It is sufficient for our present purpose to know that they were not in use in the more advanced towns and cities of the kingdom before the thirteenth century. Henry III. granted a charter to the townsmen of Newcastle-upon-Tyne for liberty to dig coals in the vicinity of that place, 1239.\* The first mention of coal that occurs in any charter in Scotland, is found in a grant executed in the year 1291, in favour of the abbot and convent of Dunfermline, conferring the privilege of digging coal in the lands of Pittencrieff, in the county of Fife.

Charcoal was used, prior to the introduction of coal, probably for superior fires in noble edifices, and for furnaces in various processes connected with art and science. Coal was called "sea colys," being conveyed by ships over the sea, and in distinction from the "char cholys" in previous use.

The "Northumberland Household Book," commenced in 1512, by Percy, fifth Earl of Northumberland, furnishes the most minute particulars of the expenses of the great ducal establishment. In this we find the following curious entry:—

" CHAR CHOLIS.

"ITEM, to be payd to the said Richard Gowge and Thomas Percy for to make provision for xx quarters of Charcolys for th' expensys of my house for oone hole yere after xijd. the quarter with the cariage Somme xxs. Whych ys apoynted to be payd to the said Richard Gowge and Percy all to geder at Sayntt Andro day next cummyng bicause they must be purveyd all at oons for to serve in the tyme of Cristymmas next after which ys bicause the Smook of the Seecolys would hurrt myne arras when it is hunge. And to the hole Somme of full contentacion for the said Charcolys for oone hole yere ys = xxs."

The "Northumberland Household Book" contains, also, several items for "fagoots" and "greet woode," in large quantities, which show

\* Brand's "History of Newcastle."

that although coal had been introduced, it was only used partially; that charcoal, wood, and sea-coal were severally employed. The large wood is described as being necessary, "because Colys will not byrne withowte Wodd," which Mr. Roberts\* thinks indicates that the coal-miners had not then found means to reach the deep strata known as "main coal." These explanations show that various kinds of fire-places must have existed.

The increasing price of wood led to the demand for a cheaper material by smiths, brewers, and others, whose trades required large quantities of fuel, and towards the close of the thirteenth century coal was imported into the metropolis from Newcastle for the use of furnaces. In 1306, however, the king was petitioned to stop the consumption of the noxious article in the City; and, accordingly, a royal proclamation was issued prohibiting the burning of coal. The royal command being disregarded, a commission of oyer and terminer was appointed for the purpose of ascertaining what persons used sea-coal (*i. e.*, coal brought by way of the sea to London), with power to punish by fine, for the first offence, and, afterwards, the demolition of the offending furnaces. As the consumers of coal had by this time learnt its value, and persisted in employing it, a law was passed making it a capital offence to burn it within the precincts of the City. *In the reign of Edward I. a man was actually executed for the commission of the crime.*† The nobles and commons assembled in Parliament complained against the use of coal as a public nuisance, alleging that it corrupted the air with its stink and smoke. Finding that the use of this economic and valuable fuel could not be suppressed, the next endeavour was to prevent the employment of it during the sittings of Parliament, and while the king remained in London.

By a petition in Parliament, 1321-2, it appears that coals had found their way into the royal palace. The petition set forth that ten shillings' worth of sea-coals, used at the king's coronation, which had been ordered of Richard del Hurst, by the clerk of the palace, had not been paid for! In the reign of Edward III. some coals were required for the furnaces built at Windsor for the smiths and plumbers engaged in the alterations then being made at Windsor Castle. But, owing to the prejudice of the Londoners, and the stringency of the pre-existing laws respecting the use of coals, none could be procured in the metropolis. The king, therefore, sent his writ to the Sheriff of Northumberland,

\* Roberts's "Social History."

† "Quarterly Review," vol. xcvi., p. 148.

ordering him to buy seven hundred and twenty-six chaldrons of coal, and send them to London. The Sheriff purchased them by the "greater hundred," at Winlaton, in the county of Durham, at 17*d.* the chaldron. From Winlaton they were conveyed in "keles" to Newcastle-on-Tyne, and thence shipped. The freight to the south was at the rate of 3*s.* 6*d.* a chaldron. On their voyage to London the colliers met with a "mighty tempest at sea," and through this, and by reason of the excess of London measure over that of Newcastle, a loss of eighty-six chaldrons and one quarter was incurred, the greater part having been thrown overboard during the tempest. Arrived at London the coals were put on board "shutes," or barges, and taken to Windsor, at a cost of 1*s.* a chaldron. The total expense of bringing this insignificant quantity of fuel to London, including its cost price, was £165\_5*s.* 2*d.*, to which must be added the barge-hire to Windsor.\*

Coals continued to be used in forges, and other large works, long before they were employed for domestic fires. Ladies were strongly prejudiced against them, believing that the fumes they emitted were obnoxious to their complexions. They refused to attend parties where coal-fires were burnt; and many persons declined to partake of meat cooked by those fires.

In 1365 the coal-trade had become so important that it was found necessary to control it by Acts of Parliament.

Harrison, speaking of the increase of the use of coal (1586), says, the employment of them "beginneth to growe from the forge into the kitchen and halle." He laments the innovation of chimneys as tending to produce effeminacy in the people:—"Now we have manye chimnyes, and yet our tenderlings complaine of rewmes, catarres, and poses; then had we none but reredosses, and our heads did never ake. For as the smoke in those days was supposed to be a sufficient hardening for the timber of the house, so it was reputed a far better medicine to keep the goodman and his family from the quack or pose, wherewith as then very few were acquainted!"

In like manner he questions the advantage of the more substantial buildings that had sprung up:—"When oure houses were buylded of willowe, then we had oken men, but nowe that oure houses are come to be made of oke, oure men are not only become willowe, but a great many altogether of straw, which is a sore alteration!"

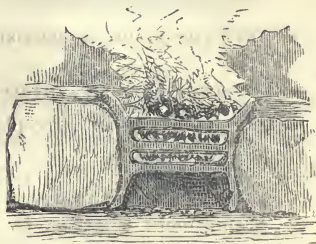
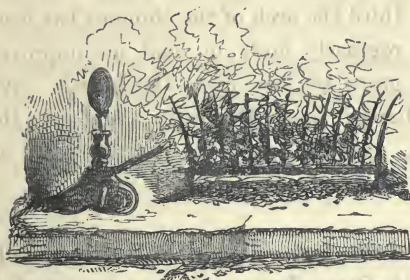
From the same authority we learn that, although coals had been in use for some centuries, there were some parts of the kingdom to

\* Turner's "Domestic Architecture."



which they were unknown:—"Of cole-mines we have such plenty in the north and western parts of the island, as may suffice for all the realme of Englande. And soe must they doe hereafter indeede, if woode be not better cherished than it is at present: and to say the truth, notwithstanding that very many of them are carried into other countreys of the maine, yet theyr greatest trade beginneth to growe from the forge into the kitchen and halle, as may appear already in most cities and townes that lye about the coast, where they have little other fewell, except it be turfe and halsocket. I marvaile not a little that there is no trade of these into Sussex and Southamptonshire, *for want whereof the smith's doe worke their yron with charre-coal.*"

When coals were first introduced to domestic use, they were sparingly used for the fires of the upper apartments of inns and large houses. The trade in wood declined, and thousands of acres, that had been employed to feed fires with fuel, were grubbed up, and applied to



OLD FIRE-PLACES ADAPTED TO THE BURNING OF COALS.

the growth of corn. In De Foe's "Tour," 1742, the gradual transition from wood-fires to coal, and the consequent effect, is thus alluded to:—"At *Shooter's Hill* we have a country much overgrown with coppice-wood, which is cut for faggots and bavins, and sent up by water to *London*. Here they make those faggots which the wood-mongers call ostrey-wood, and in particular those small, light bavins which are used in taverns in *London* to light their faggots, and are called in the taverns a *brush*. 'Tis incredible what vast quantities of these used to be laid up at *Woolwich*, *Erith*, and *Dartford*; but since the taverns in *London* are come to make coal fires in their upper rooms, the trade declines; and though that article would seem to be trifling in itself, 'tis not immaterial to observe what an alteration it makes in the value of those woods in Kent, and how many more of them than usual are yearly grubbed up, and the land made fit for the plough."

The introduction of coals gave rise to a new description of fire-place,

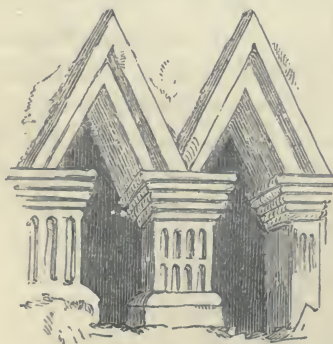
the old-fashioned grate, which was originally an "iron cradle for burning sea-coals," and many and curious were the forms which this new essential of domestic economy passed through before it gained approved shape and proportions. Old fire-places were altered to suit the combustion of the new fuel, of which instances are afforded at Haddon Hall, Naworth Castle, Sizergh Hall, etc. In one of the illustrations we see the once-favoured "fire-dog" pushed aside, and a rude iron cradle, filled with flaming coals, taking the place of the wood fire. In another large blocks of stone are employed to fill up the wide span of the chimney and support a primitive grate. In the third the arch of the chimney has been regularly built in, and an improved grate set low upon the hearth. We



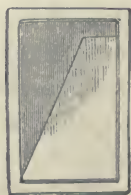
ANCIENT FIRE-PLACE, MODERNIZED.

will reserve for our future Chapter upon Domestic Comforts, the further mention of fire-places, and the modern improvements in their construction.

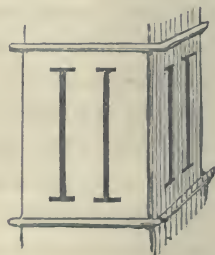
Some facts relating to windows have already been incidentally mentioned. In the earlier Anglo-Saxon houses windows consisted of



ANGLO-SAXON STONE WINDOW (*Belfry Tower, Dunhurst, Gloucestershire.*)



ANGLO-SAXON WINDOW. WINDOWS OF AN ANGLO-SAXON CASTELLATED MANSION. (*From MSS. of the 10th Century.*)



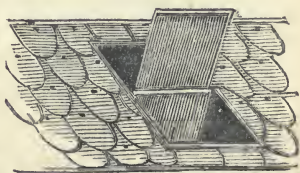
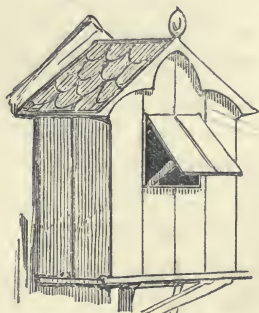
openings in the walls, with very little attempt at variation or ornament. The wind was kept out by internal hangings, and by wooden

shutters, which closed the apertures as night set in. Lattices of wicker, or of rifts of oak, arranged chequerwise, as Harrison describes them, were probably used in the earliest times. Oiled linen, horn, and other materials, such as paper, parchment, thin wood, and papyra



WINDOW, 13TH CENTURY. PRISON WINDOW, 13TH CENTURY. 13TH CENTURY.

—in fact, any substances that would admit a moderate amount of light, and exclude the cold wind—were probably employed, with the view of enhancing the comfort of dwelling-houses. The windows of churches were originally composed of strained canvas, sometimes painted as transparencies. From a manuscript of the commencement of the fourteenth



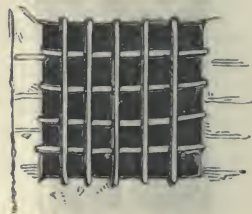
WOODEN WINDOWS, 13TH CENTURY.

ROOF WINDOW, 13TH CENTURY.

century we have collected a variety of window-structures, some of which continued down to a much later date. Although the introduction of glass to the windows of domestic buildings occurred in the thirteenth century, it was long before it found its way to the ordinary residences of the people. And even in the houses of the wealthy, a portion only of the windows were glazed, the lattices and wooden



shutters being still retained in the inferior apartments. In the time of Henry VIII. glass windows had made an observable increase in London. But the greater number were still of oiled linen, and other like material. In 1586 the use of horn had become, in large cities at least, quite superseded, but unglazed lattices still remained, and in many houses the dingy light of oiled cloth was all that the inmates enjoyed. Even after glass began to be used in windows, it was still preserved with great care, as a precious rarity, as appears from the survey of Alnwick Castle, made in 1567, in which



THIRTEENTH CENTURY.

this very remarkable passage occurs:—"And because throw extreme winds the glasse of the windowes of this and other my Lord's castles and houses here in the countrie dooth decay and waste, yet were good the whole leights of everie windowe at the departure of his Lordshippe from lyinge at anie of his said castels and houses, and dowering the tyme of his Lordship's absence, or others lying in them, were taken downe and lade up in safety: and at sooche tyme as other his Lordshippe or any other sholde lye at any of the said places, the same might then be set uppe of new with small charges to his Lp. wher [*i.e.* whereas] now the decaye thereof shall be verie costlie and chargeable to be repayed." From this it appears that, as late as the year 1567, glazed windows were so rare and costly that in a great ducal establishment they were *taken out and carefully stowed away, during the absence of the lord.*



ANGLO-SAXON DOOR.

Of the doorways of domestic edifices few particulars can be gleaned. The annexed engraving is from an illuminated MS. of the tenth century, and represents a description of doorway common to the Anglo-Saxon houses, which appears to have prevailed through subsequent periods.

The door has three ornamental hinges, and although no lock or bolt is indicated, the system of fastening by an internal chain is evident from other illustrations in the same manuscript. The two following illustrations are from a manuscript of the fourteenth century. One of them affords a very perfect illustration of various details—the porch,



DOORWAYS OF THE FOURTEENTH CENTURY.

lock, knocker, hinges, etc. The other exhibits a door in another aspect, showing its construction from the inside, with the hinges, bolt, etc. Such doors, "made with two leaves," were common in London in Henry VIII.'s time.

The large doorways, with massive frame-work, and heavy-headed nails—the broad arch and ponderous porch, with a seat for waiting-men within—belong to a class of buildings that rise above the sphere of domesticity which we have kept in view as far as possible throughout this history.

The old-fashioned door, divided into two leaves, an upper and lower—over the latter of which the gossips of the town loved to lean and talk—appears to have found no place in buildings of the periods to which we have referred, or at least have left no traces of so early an existence.

In the superior houses of the Tudor period, windows became highly decorative. Then commenced those beautiful bay-windows, of which such a perfect specimen was afforded by Bramhall Hall (see Plate). The gable-ends of buildings were also considerably ornamented,

and decorated with carvings and beautiful barge-boards. One of the most remarkable and interesting buildings of this description was Moreton Hall, in Cheshire, in which tradition relates that Queen Elizabeth danced, during a fête on one of her royal progresses, and Oliver Cromwell held a council chamber during the Civil Wars. The glazing in Moreton Hall was very remarkable, the panes being unusually small, and joined by slips of lead, so as to represent many pretty patterns. Upon bands around one of these windows were the following inscriptions:—"God is al in al thing. This window where made by Wm. Moreton, in the yeare of oure Lorde MDLII." "Rjcharde



MORETON HALL.

Dale, Carpēder, made theis window, by the grace of God.”\* Many of the rooms of Moreton Hall had floors of plaster. The fastenings of some of the doors of the upper rooms were curious; they consisted of large iron rings standing out from the middle of the doors, through which were passed bars of wood.† The walls were made of wood, wattles, and plaster.

Moreton Hall was surrounded by a narrow moat; and in the mansions of the fifteenth and sixteenth centuries the means of defence and seclusion were still considered, although they were modified by the

\* Hall's "Baronial Halls."

† Ibid.



improving peacefulness of the times. The domestic apartments still had their fronts directed to an inner court, as if the time had not yet arrived when the inmates might trust themselves to turn to the face of the open country; and in border districts, liable to frequent disturbances, these characteristics of distrust and seclusion were preserved



HOUSE WITH FOLIATED FRONT.\*

to a very late period. The seats of the gentry, and the large farm-houses, continued to be fortified, down to the time of George III.;† but in more settled localities, where large communities had begun to flourish, and citizens to grow wealthy, they displayed their prosperity

\* From Smith's "Topography of London."

† Macaulay's "History of England."

in erecting houses elaborately constructed of oak, and enriched with carved work. This multiplied those ornamental gables to which allusion has already been made, and also gave rise to houses with foliated fronts, which became numerous in towns. The ornaments with which those houses were decorated were made of compositions of plaster, and were sometimes carried to the most fanciful and incongruous extremes. One of these buildings, the subject of the annexed engraving, stood on the west side of Moor Fields. The inharmonious appearance of the decorations, and of the wooden launders which conveyed the rain from the roof to the street, is sufficiently obvious. In many of the houses thus externally embellished, the internal fittings were still in a rude state. Plaster ceilings had not been introduced, and wainscoting had found its way only into buildings of a still higher class. Hangings were therefore employed in the chief apartments to hide defects.

Smith, in his "Antiquities of London," thus describes the streets of the metropolis:—"The particular style of building in old London was for one story to project over another, with heavy beams and cornices, the streets being paved with pible stones, and no path for foot-passengers but what was common for carriages, scarce a lamp to be seen, and except a few principal streets, they were in general very narrow, and those incumbered with heavy projecting signs, and barbers' poles. London must have had a very gloomy appearance when neighbours in a narrow street might shake hands from the opposite garrets. No wonder the plague was so dreadful in 1665!" Not only were the streets thus opposed to sanitary requirements, but the apartments within the houses "were stifling, lighted by lattices, so contrived as to prohibit the occasional and salutary admission of external air. The floors were of clay, strewed with rushes, which being seldom changed, remained a foul receptacle of every pollution."\*

The more peaceful times which followed the accession of Henry VII. afforded a great impetus to the commerce and trade of London. In previous reigns, on account of the prevailing insecurity, no such establishments as the modern shops existed. Merchants took care to fortify their stores. Some of them built towers at the entrances of their establishments. One was erected by a merchant in the butter-market of Lyne. Portcullises, to let down by day and draw up by night,

\* Erasmus.



were common. In the time of Charles I. there was a castellated house, probably the residence of a merchant, at the corner of Milk Street, in Cheapside. This house had two corbel-towers. As soon as trade began to thrive, most of the streets were crowded daily with stalls, and itinerant vendors importuned foot-passengers to buy their wares. Broils were frequent between contending dealers, and riots not uncommon between the citizens, who believed themselves privileged, and foreign dealers who resisted a monopoly. The stalls and booths became so numerous that the public ways were obstructed. The palings of public buildings and churches were converted into props for miserable tents, and churchyards turned into disorderly fairs. Householders appear to have claimed the right of letting the space in front of their houses for the erection of stalls. In the year 1602, the Common Council decided, "That no citizen, or other inhabitant of London, for the future, shall, under any pretence whatever, presume to let before his, her, or their house, any stall, stand, or perpresture, upon the penalty of forty shillings." Prior to that local enactment, it was one of the prescribed duties of each wardmote to regulate the street-stalls, which were to be but "two feet and a-half in breadth, and to be flexible and moveable, viz., to hang by jew-mews, or garnets,\* so that they may be taken up and let down." The suppression of stalls led to a rapid change in the appearance of streets; the dealers took to cellars and passages, and every kind of inlet which did not interfere with the prescribed limitations; the walls of houses were knocked in, and substantial stalls, or bulks, took the place of rickety booths. But the windows were quite open, like butchers' shambles of the present day. The only protection to shop-windows was afforded by wooden lattice-work—the



SHOP IN GOLDSMITHS' ROW, CHEAPSIDE, IN 1547.

\* A kind of iron hook.



lattices of ale-houses being painted red as a mark of distinction. The whole of the frontage of Cheapside consisted of these open shops. About the year 1547, some of them were pulled down, and better structures erected in their stead. These were so great an improvement that they were the cause of much attraction. Thousands of people flocked from the suburbs to see "the glorious appearance of the goldsmiths' shops." The new shops extended from the Old Change to Bucklersbury, in one line, and were all occupied by goldsmiths, except four, which were devoted to other trades. Yet the windows were unglazed, and only the middle windows of the houses had glazed lattices, the upper ones being quite open, except when closed by wooden shutters. The shops were built high from the ground, as a protection against thieves, and some one stood at the doors for the double purpose of catering for customers, and protecting the goods.\*

A representation of the old bulk-shops is afforded by the annexed engraving. They were probably called bulk-shops from



BULK-SHOPS, FORMERLY IN LONG LANE.

the large projecting head, which extended over the pathway, being turned up at the rim, after the manner of an old-fashioned beaver, in order that the rain might be carried off end-ways. In these shops, some of which were never closed by shutters, night-strollers sometimes took their rest. The poet Savage is said to have frequently had recourse to such shelter during his moody

night wanderings; and Boswell tells of Derrick meeting Floyd in one of these places, and of their being mutually surprised and ashamed when they recognized each other. The shop represented in the

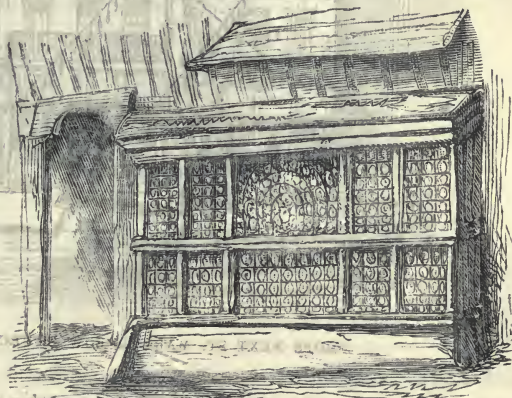
\* Archer's "Vestiges of Old London."

engraving appears to have been of considerable dimensions in its prime, but to have been subsequently divided into two establishments, one of which received a glazed sash.

Over the massive "bulks" of these shops, and from the house-tops, were frequently to be seen growing large patches of the house-leek. In those simple times it was regarded as a "protection against thunder and lightning"—a crude notion which still lingers in rural districts. Horse-shoes were frequently nailed over the doorways—an equally effective charm against witches. In 1813, Sir Henry Ellis counted seventeen of them nailed over the shop-doors in Monmouth Street. But light has dawned even there, and the curious may now look in that locality for a horse-shoe in vain.

The annexed engraving represents the basement window of a house which stood in Sweedon's Passage, Grub Street, and is said to date from the time of Henry IV.

The house to which it was attached is said to have been occupied by Sir Richard Whittington, in the reign of Henry IV., and by Sir Thomas Gresham, in the reign of Elizabeth. The windows are those of the latter reign, and



EARLY GLAZED SHOP FRONT.

afford a good illustration of the appearance of the first glazed windows of shops.

From a drawing of Cheapside, about the year 1760, it will be found that shops still continued open, though some of the windows had begun to receive the protection of glass. These shops stood by the side of Bow Church. While shops remained open, the interruptions to trade must have been constant. In bad weather it would be impossible to expose goods for sale for days together; and when a sudden shower came on, it would be necessary to put up the shutters quickly, or to drag the wares away in a confused heap. In the winter, the display of goods would be vastly inferior to that of the summer, and the very aspects of the shops must have been changed. In many of these



shops articles were both made and sold, for the mere retailer had then scarcely found an existence. Along the streets, therefore, prevailed the discordant noise of hammers, the click of shears, and burr of lathes ;



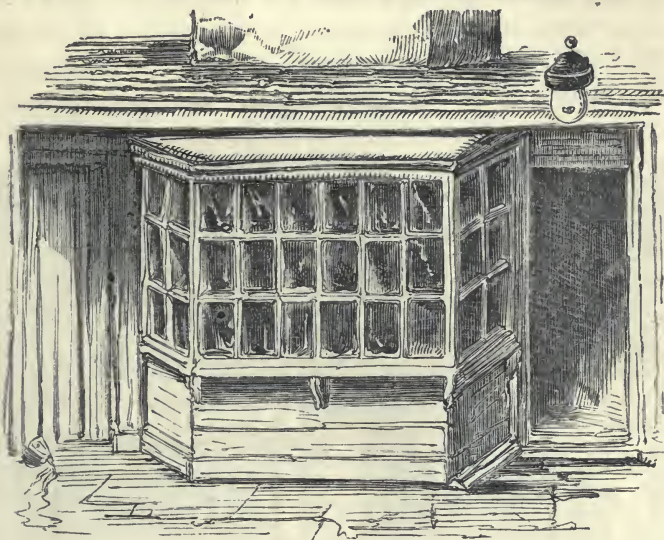
SHOPS NEXT ST. MARY-LE-BOW CHURCH, CHEAPSIDE.

and idlers, lounging by the doors or squatting upon the open windows, whiled away the tedious hours of a spiritless life.

As late as 1810 there were sixteen open shops in White Horse Yard, Drury Lane, inhabited by woollen-drapers and piece-brokers, whose goods were exposed to all weathers. When the windows of shops were first glazed, they were generally formed with sashes, so that in fair weather they could be thrown open, for there was a great prejudice against the glazing of windows, the feeling being that customers would never enter unless they could be first brought to "higgle" about the goods. The shop which forms the subject of the following illustration must have been a great improvement in its day. The panes of glass are tolerably large, and the oil lamp over the door shows that it must once have been an establishment of some importance.



The whole of the fittings of these old-fashioned shops were rude and clumsy. The windows were closed by sliding shutters, which were pushed along a deep groove extending the whole length of the window; then a heavy bar of iron, which every night endangered the head of



ANCIENT SHOP ON THE SOUTH SIDE OF LONDON WALL.

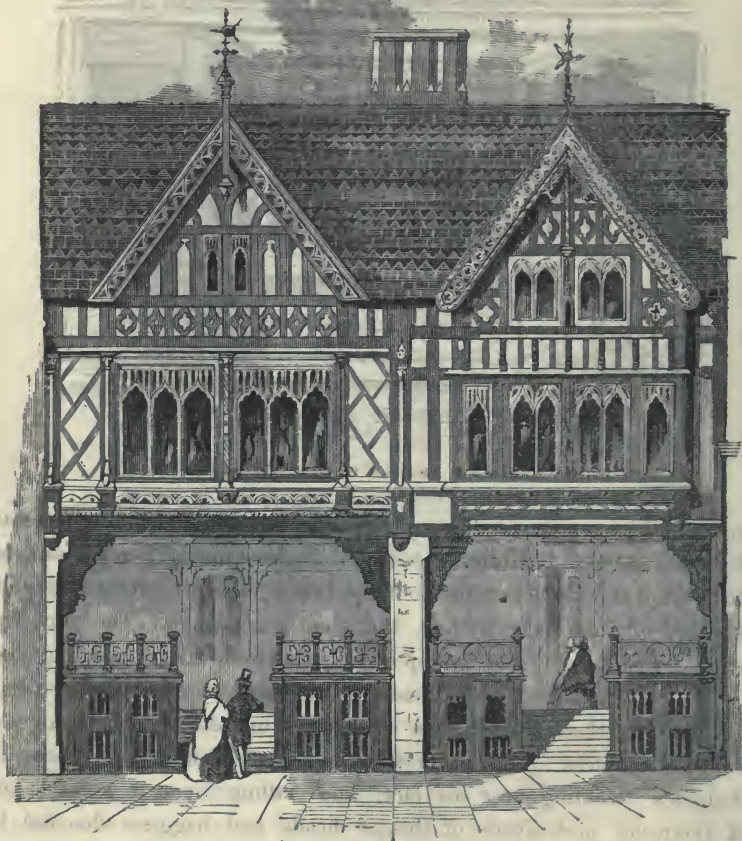
some foot-passenger plodding his way in the dim light, was necessary to guard them; and after the zealous endeavours of two persons, one inside and the other outside, to fix certain ponderous screws and bolts, the labour was accomplished, the shop closed, and the flickering candle withdrawn from the sportive pranks of the wandering wind.

In Scotland it was not unusual to embellish the fronts of houses of the trading classes with rude sculptures indicating the employment of the occupiers. The undertaker appeared with tears shaped like tadpoles trickling over his face, and falling upon a coffin below; a tempting portraiture of sheeps' heads and haggises denoted the butchers; the cobbler appeared "sticking to his last;" and the smith was represented before a flaming forge, with his hammer raised as if about to descend upon the anvil.\*

A striking instance of the effect of local circumstances in giving

\* "Quarterly Review," vol. lviii.

character to the architecture of domestic dwellings, is to be found in the City of Chester. The city is divided into four principal streets, called Eastgate Street, Northgate Street, Bridge Street, and Watergate Street. The carriage-road in these streets is on a level with the underground warehouses; over these are open galleries, called *rows*,



HOUSES AT CHESTER.\*

for the accommodation of foot-passengers, which occupy the space between the front of the tradesmen's shops and the street; the upper rooms of the houses project over the rows, so as to be even with the warehouses beneath. The general appearance of these rows

\* From the *Builder* newspaper.



is as if the first stories in front of all the houses had been laid open, and made to communicate with each other, pillars only being left to support the upper structure: the foot-passengers appear from the street as if they were walking along within the houses up one pair of stairs. At the intersection of the streets there are flights of steps leading to the opposite rows. Some of the rows are so wide that the proprietors of the houses place stalls between the footway and the street, which they let out advantageously to other tradesmen, particularly during the fairs. The origin of these rows is attributed to the period when Chester sustained repeated attacks from the Welsh, which induced the inhabitants to build their houses in this form, that when the enemy should at any time have forced an entrance, they might avoid the danger of the horsemen, and annoy their assailants as they passed through the streets.\* Some of these houses having fallen to decay, have been rebuilt in the old style. The savage Cambrian horsemen no longer shout their war-notes through the streets, and that which was once intended as an artificial ambuscade is now converted into a description of corridor, rich with the fruits of commerce and manufactures.

The revival of brick buildings, in the fourteenth century, exercised a considerable influence upon the architecture of subsequent periods. In the Roman era bricks were known and employed; but upon the Saxon ascendancy the practice fell into desuetude. Both the Romans and the Saxons appear to have used wall-tiles of various sizes and shapes: these were employed for the facings of walls, and also laid across them at convenient distances, to bind the materials together, and at the external angles to strengthen them, but not for their solid construction. During the wars in France, in the reigns of Edward I. and II., wall-tiles, which before were of uncertain dimensions, began to be made after the Flemish manner, which rendered them more applicable to the construction of substantial edifices. The earliest reference to the revival of building with bricks assigns it to the reign of Richard II., when, according to Leland, "the town of Kyngeston-on-Hull waxed very rich, and Michael de la Pole, merchant there, was made Count of Suffolk, in whose tyme the towne was wonderfully augmented in building, and was enclosyd with ditches, and the wall begun, and yn continuance endyd and made all of brike, as *most part of the houses of the*

\* Lysson's "Magna Britannia."



*towne at that tyme was.* \* \* \* Michael de la Pole builded a goodly house of brike again the north, and of Saint Mary's church, like a palace, with goodly orchard and garden enclosed with brike. He also builded three houses besides in the town, whereof every one has a tour of brike." The use of bricks, however, does not appear to have much increased until the reign of Henry VI. In the first year of this reign a license was granted to Roger Tennis, knight, to embattle and fortify his manor-house at Herts Monceaux, in Sussex. The house was wholly built of brick, in the castellated style. The seat of the Tyrrels, at Heron Gate, in Essex, was another embattled building, coeval with Herts Monceaux, and built of bricks.\* Eton College, and Queen's College, Cambridge, two considerable brick buildings, are ascribed to this period.

The lower parts of the early brick walls, about two feet above the ground, were commonly made of rag-stones, laid in the common manner; but the upper parts were faced with bricks on the outside, and on the inside with soft stone, or any materials the locality afforded; others were faced on both sides with half-bricks, and the space between filled up with any description of turf, peat, or rubbish.

The prices of bricks precluded their employment for the humbler dwellings of the people. In Edward III.'s time they were 6s. per thousand; in the time of Richard II. 6s. 8d., at which price they continued down to the reign of Henry V. These prices were considerable in those days. The first application of bricks to private houses was, therefore, in the construction of chimneys, for which they were adapted, not only for the facility of building, but for the security which they afforded against fire.

In the time of Henry VII. flints were employed in building, and the newly-raised edifices assumed a more regular form. In the reign of Henry VIII. bricklayers had become skilled workmen, to which the Palace at Hampton Court and St. James's Palace bear witness in the present day.

About this time it was customary to chequer the fronts of brick and stone buildings with black flints, sometimes in regular square figures, at other times intermixed with stone, in imitation of open Gothic work. Many of these were neatly executed, and presented a good effect. About the year 1530, Hans Holbein built a beautiful

\* "Archæologia," vol. i.

gate opposite the banqueting-house, Whitehall, in this manner, and ornamented the fronts with busts, in circular recesses, with mouldings round them of baked clay in proper colours, and glazed in the manner of delft ware.\* The monotony of brick fronts was relieved by chequers formed of glazed bricks, of a darker colour than the rest, which were generally of a deep red. The window-frames were sometimes of stone, but very often of moulded bricks, covered with strong plaster or stucco, imitating stone. During the reigns of Queens Mary and Elizabeth, the ornaments of Grecian architecture, which had been introduced in the time of Henry VII., were frequently imitated in burnt clay, and with them the fronts of houses and shafts of chimneys were ornamented. But still the buildings were badly executed; the walls continued to be little better than two thin shells of brick, filled in with small rough stones, mixed with clay instead of mortar, and others with turves or peat.

Fuller, in his "Church History," asks pardon for a digression, and remarks—"Indeed now [1587] began beautiful buildings in England, as to the generality thereof, whose houses were but homely before, as small and ill-contrived, much timber being needlessly lavished upon them. But now many most regular pieces of architecture were erected; so that, as one saith, they begin to dwell *latius* and *lautius*, but I suspect not *lætius*† hospitality much decaying." And he adds:—"Indeed, at this time there was more uniformity in the buildings than conformity in the church."

London, having in the reign of James I. increased beyond that monarch's conceptions of due metropolitan size, he issued several proclamations prohibiting its further extension. In the second year of his reign, he issued the first of these prohibitory mandates, which preclude all manner of building within the city, and a circuit of one mile thereof. Among its commands was the salutary one to a wooden metropolis, that all persons should henceforward build their fore-fronts and windows of either brick or stone. A previous proclamation to the same effect had emanated from Queen Elizabeth, but to no effect; and, in 1607, offenders were censured in the Star Chamber for building contrary to the tenor of the king's proclamation. This had the result of increasing brick and stone buildings in the metropolis. At this time, too, architecture began to revive under the influence of the genius of Inigo Jones, the king's chief architect.

\* "Archæologia," vol. iv.

† *Widely and elegantly*, but not *joyfully*.

The first house of note that was erected in conformity with the proclamation was one in the Strand, built for Colonel Cecil. After that, one near Draper's Hall, Throgmorton Street, another for an opulent goldsmith in Cheapside, opposite to Saddlers' Hall, and one for a leather-seller in St. Paul's Churchyard, the proprietor of which was compelled to take down, and rebuild it according to the requirements of the proclamation, after he had constructed it of timber. Inigo Jones's plans of houses were introduced from Italy, and probably partook too much of the Italian character for the climate and habits of the English. He erected several private buildings, the designs of which were unequalled, and were calculated to impart a new life to domestic architecture, but for the troubles of the time in which he lived, and the overthrow of King Charles, his second patron. Jones was a Roman Catholic, for which delinquency he had to pay a fine of £545 in the year 1646. The intolerance of his time, and the troubles consequent thereon, wore out the genius whose works give immortality to his name.

The fire which destroyed London in 1666, a few years after the death of Inigo Jones, brought into notice the talents of Christopher Wren, whose career was opened under the reign of Charles II. And what an advent! What a situation was he placed in! And what a terrific visitation occurred to the nation in his time! A burning metropolis, whose inhabitants had just been ravaged by a pestilential plague—a nation burdened with imposts, a foreign war, and an extravagant monarch. Yet Wren designed and executed more works than any other architect, ancient or modern.\*

The allusion to "a burning metropolis" reminds us of the dire calamities into which whole communities were frequently plunged by accidents of this description. London seemed made for a general bonfire; and such was the condition of every considerable town. To confine a fire to a single dwelling, when houses were built of thatch, wood, and plaster, with their overhanging stories inviting the ascending flames, was a matter of impossibility. Whole streets were swept away in a few hours. Besides, the means for the extinction of fires were then utterly inadequate. True, every alderman was provided with a hook to pull down burning edifices, but there was no organized fire brigade with efficient engines, and daring men, ready on an instant notice to fly to the rescue of life and property. Nor were there fire

\* Elmes's "Life of Sir Christopher Wren."



insurances before the commencement of the seventeenth century, though houses were, in a few instances, insured by private speculators before that time. Briefs were granted to persons "burnt out" to solicit charity from the benevolent. These were signed by clergymen, who recommended the sufferers to the pity of the charitable; but such means may well be supposed to have served the purposes of the impostor far better than the need of an industrious tradesman reduced in a few hours from comfort to beggary.

We feel it to be no part of our duty to give the history of architecture as an art, nor to enter into an exposition of its various styles. Our object is simply to describe the improvements that have taken place in the dwellings of people of all classes, and to indicate the degree in which those improvements have ministered to the comfort and morality of a rapidly growing population. That among the professors of architecture there are some who believe in the decline of the art, we are aware; and yet they are compelled to concede that *in all that relates to the comfort and decency of domestic life, incalculable improvements have been made:—*

"Are we," asks Mr. Scott,\* "as Englishmen, satisfied with the state of domestic architecture amongst us; or, ought we to be so? *I am not asking whether our dining-rooms are comfortable, our drawing-rooms brilliant, or our parlours snug*—we are pretty sure to take care of ourselves as to comfort—but are our houses pleasant things to look upon, as well as comfortable to live in? Are they objects which we feel a national pride in, or could wish to point out to our visitors from other countries as symbolizing well with the state of civilization we have attained? Do they contrast satisfactorily with the houses of our forefathers, built in periods that we are accustomed to think rude? Do our town-houses add grandeur and picturesque effect to the streets of our cities? Do our country-houses harmonize well with the scenery around them, and add beauty to the landscape? Then, again, how do we feel satisfied with the look of our country towns? Does a view of their streets tend to elevate the feelings, and excite our patriotic pride? Do our great manufacturing and commercial towns contrast favourably with the ancient seats of industry and commerce, such as we see in Flanders and Germany? Again, how do we like the look of the cottages of our poor, as compared with the old cottages we often find of the sixteenth and seventeenth centuries, such as those of the villages of Gloucestershire, Northamptonshire, and Somerset?" And he adds, "Now, let us look back for a moment to former periods, when civilization was less far advanced. Go back almost as far as you like—go to the very infancy of modern civilization—and as far back as any remains of domestic buildings have escaped the hand of time, we find them more systematically treated as to care for external appearance than is usual among ourselves. From the twelfth century onwards, we have domestic remains which, in

\* "Remarks on Secular and Domestic Architecture," by G. G. Scott, A.R.A.

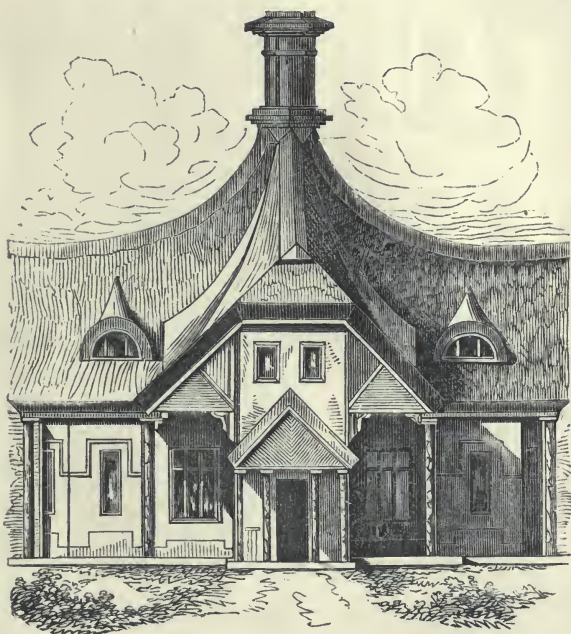
every instance, however simple they may be, display real architecture, thought and care. Of the thirteenth century, many of the remains of houses, both in cities and in the country, though never richly ornamented, are really noble specimens of architecture. In the fourteenth they became—though retaining a grand superiority of treatment—magnificent; while, in the fifteenth and sixteenth, the domestic architects strained every nerve to render their cities noble and picturesque, and their country-houses beautiful additions to the scenery which surrounded them.”

As far as relates to the decorative achievements of architecture, there may be some truth in this. And yet that truth is only partial, for the skill of architects, in the times to which Mr. Scott refers, was directed to endowed edifices, to public buildings, and to the mansions of the nobility—the remains to which he points, in corroboration of his opinions, were the exceptions, and not the rule. Only within a very recent period has the eye of the architect been turned towards the dwellings of the humbler classes of the community. In modern days thousands of people, having acquired means of moderate independence, have become the proprietors of their own houses. Of such persons, those who may be considered the middling orders of society, have been, for the most part, left to become their own architects. Hence the tardiness with which the improvements made in the accommodation, arrangement, and exterior beauty of the mansions of the wealthy, have found their way to the dwellings of the middling classes.\*

But let us test the challenge which has been offered by Mr. Scott, of comparing the buildings of “the very infancy of modern civilization” with those of the present day. Here is a house, ranking no higher than a gate-lodge, which, from a striking similarity of outline with the manor-house of the thirteenth century, may be contrasted therewith. The rude internal arrangement of houses of that period has been already described. Instead of a central chimney, rising over an open fireplace, the middle of the roof is occupied by a group of chimney-shafts, communicating with each of the principal apartments. The house is of two stories, which are divided into six bed-rooms, a spacious living-room, a dairy, scullery, and closet. Every room is lit by a window, and the different shapes of the windows are made to contribute to the architectural elegance of the structure. The gables are extended beyond the walls, their extremities being brought to rest upon simple pillars, adding considerably to the beauty of the building, by throwing deep accidental shadows upon the walls, without burying the whole in

\* Brook's “Cottage and Villa Architecture.”

shade. The projection, being continuous, protects the walls from wet, and affords a dry passage around the house in rainy weather. The windows on the ground-floor are placed low, so that light is not obstructed by the overhanging roof, while those above are either placed in gables or in the roof itself. Thus, in a mere cottage, in comparatively little space, the modern architect manages to combine internal comforts and conveniences, many of which were unknown even in the best houses of the Middle Ages. What we claim for modern architecture is, that

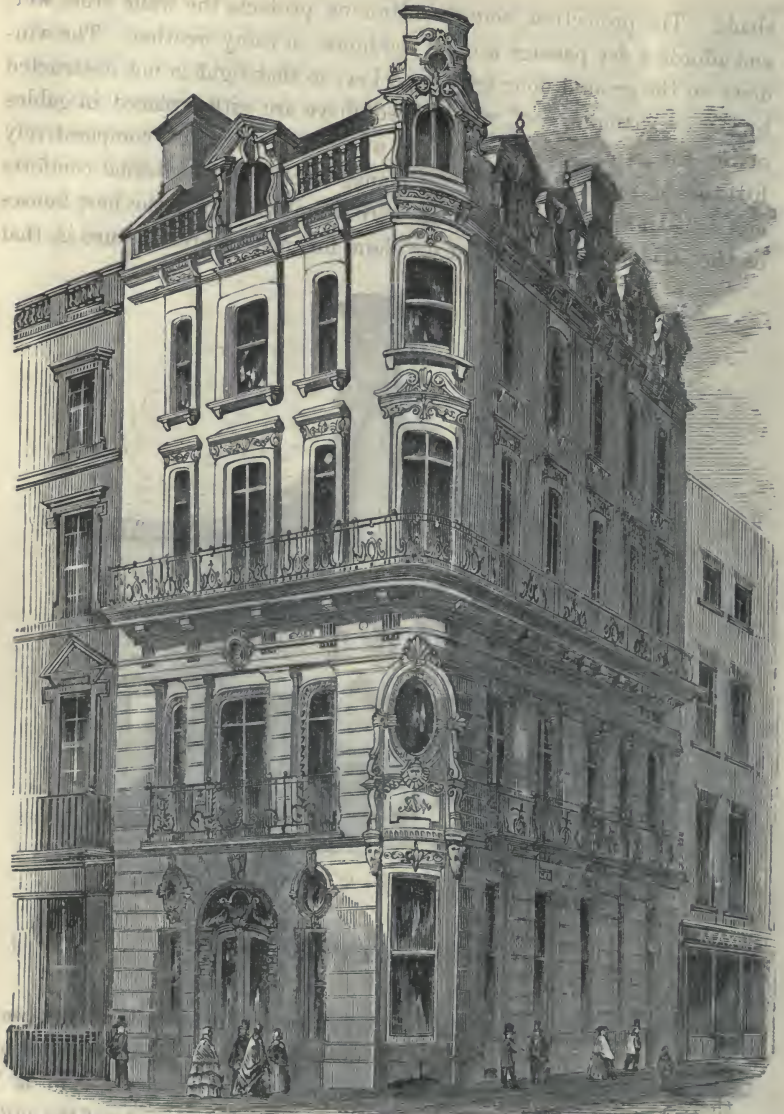


DUNSTALL HALL GATE-LODGE.\*

it has brought into the humblest dwellings of the people all the *conveniences* of the best buildings of ancient times, with many additions thereto—everything, in fact, but their great dimensions—and it has accomplished this without necessarily sacrificing the beauty of the edifice. Wherever architectural design is in fault, the explanation may generally be sought for in causes wholly independent of the skill of the architect, or the aspirations of the times.

\* The design of Francis Goodwin, author of "Rural Architecture."





THE SOVEREIGN LIFE OFFICES.

As an example of the street architecture of the present time, we may invite attention to the buildings recently erected for the Sovereign Life Offices, St. James's, Piccadilly, a style which is daily extending, and supplanting the deformities of the old thoroughfares. Not only is



THE UNION INSURANCE OFFICES, CHANCERY LANE.

external decoration adequately regarded in these new buildings, but every attention is paid to internal economy, and to safety against fire. Few houses are, at this time, erected in the streets of London without



some attempt at decoration. The building of which we now give a view was designed by Mr. Horace Jones, architect. The fronts of the ground and mezzanine floors, and the cornices and dressings to the upper part are executed in Caen stone; the facing of the upper part is of Bath stone. The lower portion of this building is devoted to the uses of the Sovereign Office. The ground-floor contains the public office, secretary's and strong-room; the mezzanine floor, the board-room and lobby, directors' waiting-room, etc., and the medical officers' room; the basement contains washing-rooms for clerks, a second strong-room, housekeeper's apartments, and cellarge; the three upper floors are three separate sets of chambers, with three rooms, and requisite convenience to each set.\*

Buildings of this type are constantly multiplying, not only in the more aristocratic neighbourhoods, but in the very centres of business localities: witness the new edifices in Fleet Street and Chancery Lane, and the vast improvements in New Cannon Street, where the *depôts* of our merchants rise, not merely with the dimensions of the palaces of old, but with a solidity and grandeur which do honour alike to the wealth of the world's metropolis, and the science and skill of its architects and builders.

It has generally been objected to brick buildings, that their monotonous and gloomy appearance was ill calculated to give dignity to the aspect of our cities. Tavistock Chambers, represented in the following illustration, has been recently erected from the designs of Mr. Charles Gray, who has paid much attention to the adaptation of brickwork to street architecture. The fronts are faced with yellow malm bricks, and the gauged arches to the windows, cornice, and other parts are executed in red and black bricks. The ground-story throughout is built of red and yellow bricks, constructed in alternate courses. The string-course to the third story is ornamented with Minton's porcelain tiles, and the whole of the dressings to the windows, the porch, entrance, shafts, and caps of columns are executed in Bath stone. We have the assurance of the architect, that the total cost of the ornamental brickwork and stone dressings of this building did not exceed in amount the ascertained cost of covering the building with stucco, and the cement decorations generally put on a building of a similar class.†

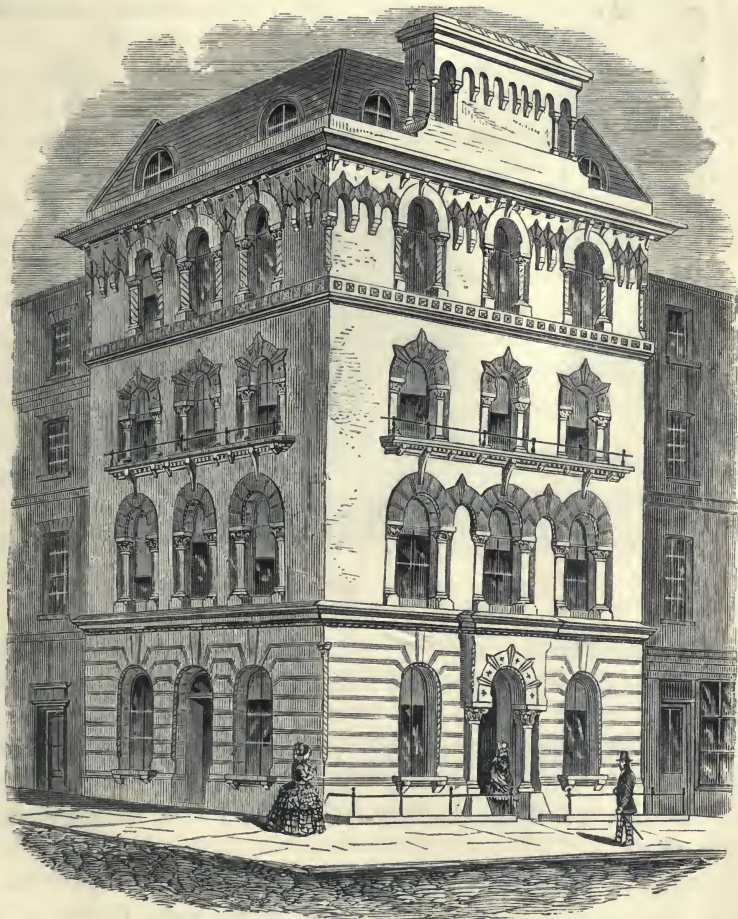
It is unnecessary, we think, to do more than call attention to the excellent suburban residences of our gentry, and the merchant and

\* The *Builder* newspaper.

† *Ibid.*



trading classes. Every populous town and city is gradually becoming surrounded with mansions and villas, detached and semi-detached, where, with more or less of garden-ground and conservatory, the retired merchant or the busy tradesman reaps the reward of years of toil, or throws off at intervals the cares of life, and gathers fresh health and energy to pursue its struggles.

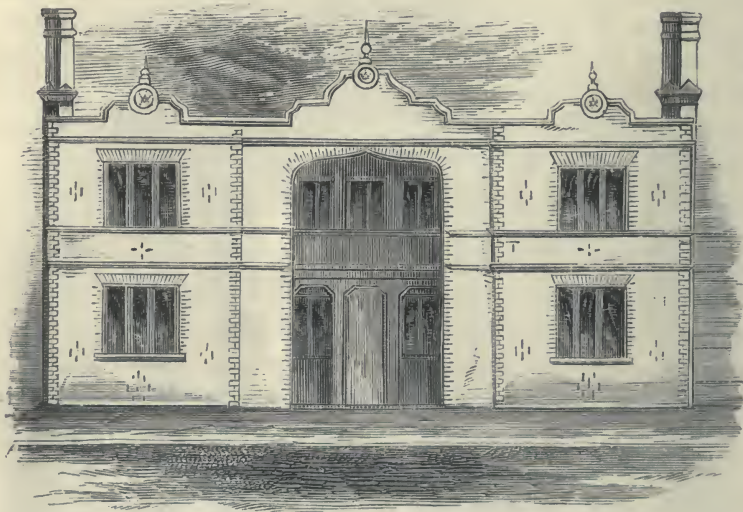


TAVISTOCK CHAMBERS, SOUTHAMPTON STREET, STRAND.

But one of the most commendable features of the present time is to be found in the efforts that are being made by philanthropic individuals and benevolent societies, to improve the dwellings of the artizan and labouring classes. From among the numerous designs of

edifices for this purpose we select those known as "Prince Albert's Cottages," as being perfectly unique, and combining every provision for domestic health, comfort, and decency, with great neatness and economy of design.

Each building is calculated for the accommodation of *four families*. The most prominent peculiarity of the design is that of the receding and protected central open staircase, with the connecting gallery on



THE PRINCE CONSORT'S COTTAGES FOR ARTIZANS.

the first floor, formed of slate, and sheltered from the weather by the continuation of the main roof, which also screens the entrances to the dwellings.

The four tenements are arranged on precisely the same plan, two on each floor.

The *entrance* is through a small *lobby*, lighted from the upper part of the door.

The *living-room* has a superficial area of about 150 feet, with a closet on one side of the fire-place, and in and upon the walls are various domestic conveniences, such as shelves, etc.

The *scullery* is fitted up with a sink, beneath which is a coal-bin; a plate-rack at one end, drained by a slate slab into the sink, covers the entrance to the dust-shaft, which is enclosed by a balanced self-acting iron door. The *dust-shaft* leads into a closed depository, under



the stairs, and has a ventilating flue, carried above the roof. The *meat safe* is ventilated through the hollow brickwork, and shelves are fixed over the doors.

The *sleeping apartments*, being three in number, provide for that separation which, with a family, is so essential to morality and decency. Each has its distinct access, and a window into the open air; two have fire-places.

The *children's bed-rooms* contain 50 feet superficial each, and, opening out of the sitting-room, an opportunity is afforded for the exercise of parental watchfulness, without the unwholesome crowding of the living-room by its use as a sleeping apartment.

The *parents' bed-room* has a superficial area of about 100 feet. The recess in this room provides a closet for linen. In each of the bed-rooms a shelf is carried over the door, with a rail fixed beneath.

The *water-closets*, of which there are four, are fitted up with Staffordshire glazed basins, which are complete without any wood fittings, and supplied with water from a slate cistern in common of 160 gallons, placed on the roof over the party-wall and the staircase walls. The same pipes which carry away the rain-water from the roof serve for the use of the closets.

The rooms are *ventilated* by hollow bricks, communicating with the principal fire-place, and the buildings are *fire-proof*.

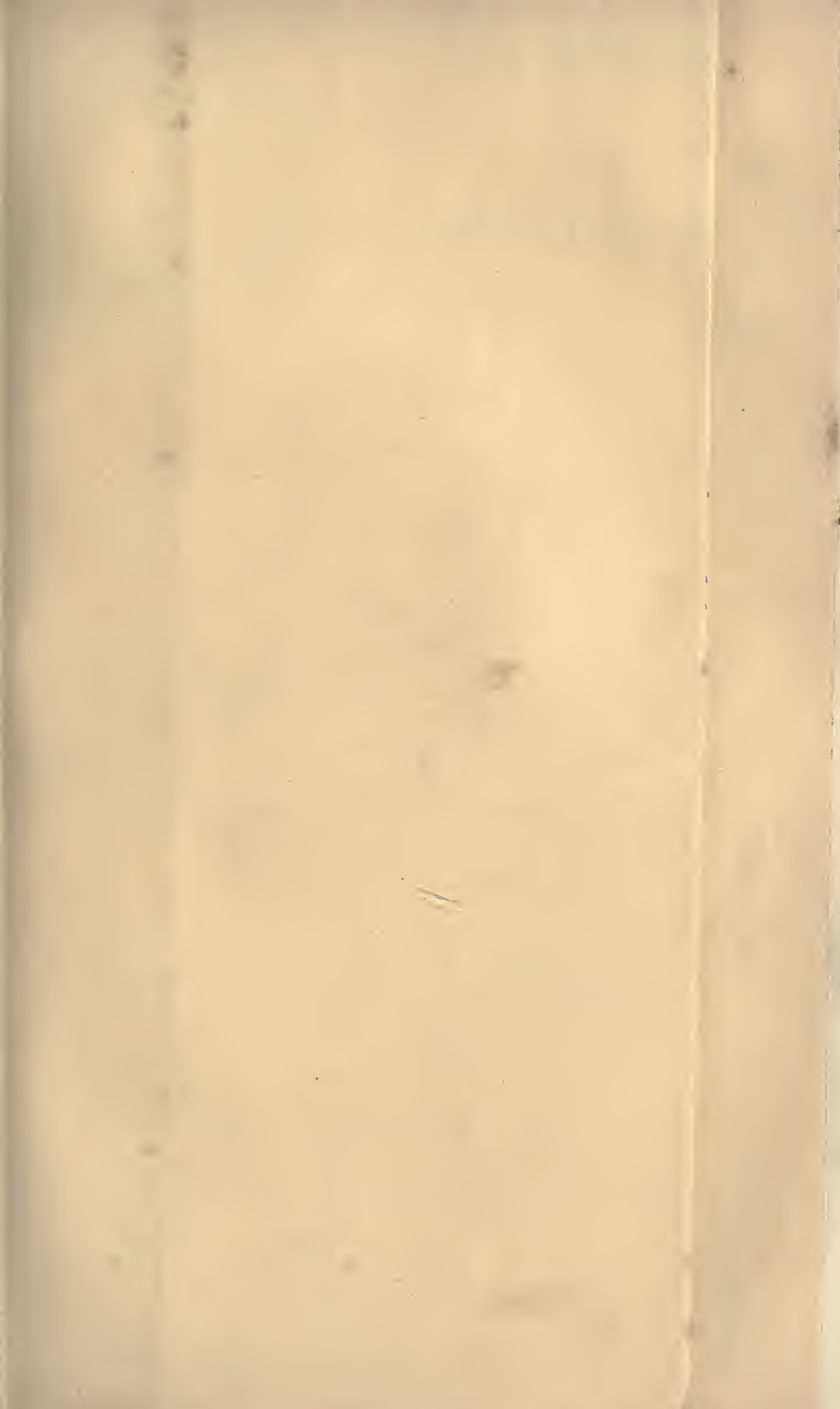
With this illustration we close our history of the Progress of Domestic Architecture. It is true that much remains to be done; but then *much is doing*; fresh strides are made daily in the road of improvement. Kings and Princes have hitherto gained honour for having been the founders of churches, monasteries, palaces, and castles. It is a significant mark of Progress that, in these days, the Prince, while enjoying the luxuries of Palaces, zealously endeavours to promote the comforts of the Cottage, and studies the minutest details which involve the health, morality, and happiness of the labouring community.

We must say a word or two respecting a class of buildings of which the present generation may well be proud, and which assume a social, if not a domestic character. These are our Theatres, Public Halls, Galleries, and Museums, in which the people gather daily to realize the inspirations of Music and the Drama, to listen to the



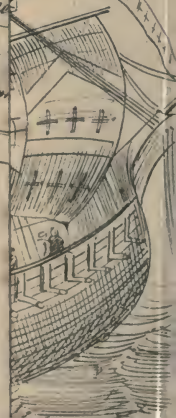
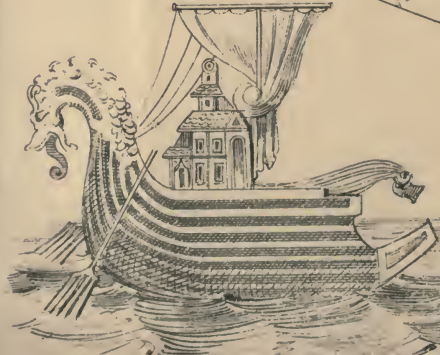
teachings of philosophers, and the eloquence of statesmen, to contemplate works of Art, and to behold the productions of Nature gathered from the remotest regions of the earth. There was a time when the cock-fight and the bull-bait formed the chief amusements of the masses, and when Shakespeare's Play House found a formidable rival in the neighbouring Bear Garden. The hundreds of thousands of people who, in present days, visit our museums and galleries, or the Crystal Palace at Sydenham, are being schooled in the humanizing arts of refinement, and trained to fitness for a higher state of civilization. Lessons may be learned in our very streets; in the varied display of modern shop-windows there are to be found works of value and of beauty, the productions of every clime, and the produce of every description of human skill and industry. Looking upon these, the humblest member of the State must insensibly be instructed, and impressed with some degree of aspiration. The improvement of the individual promotes the elevation of the mass; and, though there yet remain rags and dirt, drunkenness and squalid homes, we may cherish the hope that the stagnant morasses of our social state are gradually being drained, and that places now rank with corruption, will one day bear fruit.

[END OF THE SECTION UPON "DOMESTIC ARCHITECTURE."]



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About





#### IV.—THE PROGRESS OF SHIPPING, NAVIGATION, AND GEOGRAPHICAL DISCOVERY.



HERE was a time when the “discovery” of the island of Britain aroused in ascendant Rome a greater curiosity and wonder than attended the finding of the New World by the daring Columbus. Although Britain was known to some of the nations of the East before the invasion under Julius Cæsar, and was traded with by the Phœnicians and the Gauls, the Romans

prior to the invasion, appear to have known as little of Albion as the Genoese discoverer did of the great American continent, when told by a Portuguese pilot, that, after the wind had been westerly for several days, he found in the sea a piece of wood, curiously wrought, but not with iron, and that, after westerly winds, large canes came floating upon the sea from the direction of some unknown land. Therefore, when Cæsar took his British captives to Rome, they were paraded through the streets of the city, and their rude dresses, warlike equipments, and one of their simple coracles exhibited to the wondering crowd. So it was when Columbus entered Barcelona with a few of the painted natives of the Bahama Islands, and when Drake returned to England, bringing with him a group of kidnapped South Sea Islanders.

The Phœnicians, finding their trade to Britain profitable, were

anxious to conceal it from the knowledge of other nations. Strabo says, that "In the most ancient times, the Phœnicians from Cadiz were the only persons who traded to these islands, concealing that navigation from all others. When the Romans once followed a Phœnician ship with a design to discover this market, the master maliciously and wilfully run his ship among shallows, and the Romans, following, were involved in the same danger. The Phœnician, by throwing part of his cargo overboard, made his escape; and his countrymen were so pleased with his conduct, that they ordered the loss he had sustained to be paid out of the public treasury."

We have already made some remarks\* upon the want of shipping on the part of our British ancestors, whose vessels appear to



CORACLES OF ANCIENT BRITAIN.

have been nothing more than rude coracles, consisting of frames of wicker, covered by the hides of buffaloes. But at the period which commences our native history, the art of building ships seems to have been understood in many parts of the world. Not only the maritime states of Greece, but the Greek colonies of Italy, Sicily, and Gaul, excelled, according to the knowledge of their age, in the arts of ship-

building and navigation. History tells of a prodigious ship built at Syracuse, under the direction of Archimedes. This vessel was constructed 200 years before the birth of Christ, and, like the great "Leviathan," appears to have stuck fast for a time, for means to her completion. According to Athenæas, she "had three masts, of which the second and third were got without much difficulty; but it was long before they could find a tree fit for the first or main-mast. This at length was discovered upon the mountains of Britain, and brought down to the sea-coast by machines invented by a famous mechanic."

From Charnock's "Marine Architecture," we gather the following particulars respecting Roman vessels:—The triremes\* were 105 feet long and 11 feet broad; the quadriremes† were 125 feet long and 13 feet broad. The triremes, after the time of Julius Cæsar, were 90 feet long and 10 feet broad. These dimensions give a much greater comparative length to breadth than the proportions adopted for the Maltese and Neapolitan galleys of more modern times; in them the length seldom exceeding seven breadths. Cæsar himself gives a good idea of the size of the Roman vessels employed in the invasion of Britain; for he says, that they were so large that they could not approach the shore near enough for the soldiers to disembark, but that they were obliged, encumbered as they were with their arms, to jump into the water, which was breast-high. \* \* \* These ships were built invariably of pine, cedar, or other light woods, excepting about the prows (which were of oak, strengthened with iron or brass), to withstand the shock of opposing vessels. Oak was first applied to ship-building by the Veneti. Copper or brass was introduced for fastenings, in consequence of the rapid corrosion of iron, about the time of Nero. Pliny speaks of the use of flax for caulking the seams. So far from sheathing being a modern invention, an old author, Leo Baptisti Alberto, mentions in his "Book of Architecture," lib. v. cap. 12, a ship of Trajan's, that was raised from the Lake of Riccia, after lying there for 1300 years, and which was sheathed all over with lead, fastened on with copper nails.

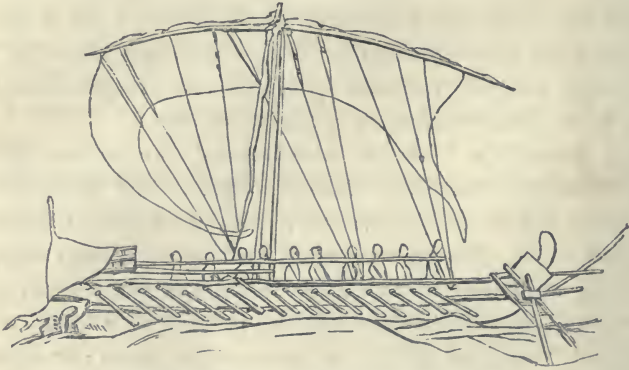
The ships of the Veneti, inhabitants of France, near the entrance of the Loire—a people who were aided by the Britons in their engagements with Cæsar—are thus described by the Roman conqueror:—"Their bottoms were somewhat flatter than ours (the Roman), the

\* Vessels with three rows of oars.

† Vessels with four tiers of oars and rowers.



better to adapt them to the shallows and to sustain without damage the ebbing of the tide. Their prows were very high and erect, as likewise their sterns, to bear the hugeness of the waves and the violence of the tempests. The hull of the vessel was entirely of oak, to stand the



ROMAN GALLEY, FROM TRAJAN'S COLUMN.

assaults and shocks of the tempestuous ocean. The benches of the rowers were made of strong beams about a foot in breadth, and were fastened with iron bolts an inch thick. Instead of cables they fastened



ROMAN MERCHANT SHIP, FROM TRAJAN'S COLUMN.

their anchors with chains of iron, and used skins with a sort of thin, pliant leather for sails, either because they wanted canvas and were ignorant of the arts of making sail-cloth, or because they imagined that canvas sails were not so proper to bear the violence of tempests,

the rage and fury of the winds, or to propel ships of that bulk and burden."

While the Britons learned something of naval architecture from their conquerors, the latter contrived to gain something from the people whom they had subjugated. They constructed a vessel which they called a *picta*.\* This was a long boat like a modern pinnace, smeared with wax to facilitate its passage through the water, and was manned by about twenty rowers. As its principal use was to gain intelligence, or to dart upon an enemy, it was desirable it should remain unseen as long as possible; for which reason the sails and rigging were dyed of a light blue colour, to resemble the sea, and the crew wore clothing of the same hue. The Romans improved the British shipping; the Emperor Claudius bestowed several privileges by law on those who built ships for trade, so that about the year 359 there were eight hundred ships employed in the exportation of corn from Britain to Gaul. Besides the merchant vessels, the Romans had also a fleet of ships of war to secure the coast and protect the trade; this fleet was commanded by an officer of great rank, and his title was the High Admiral of the British Seas. Soon after the death of Alectus, the Saxon pirates, who had before infested the sea-coasts, began again their usual ravages; plundering the inhabitants near the sea-shore, and seizing upon the merchant ships which were proceeding on their voyages; these insults obliged the Romans to keep a strong fleet, and to erect several forts upon the coasts where the pirates usually landed; and these were put under the command of an officer of considerable rank, called the Count of the Saxon Shore in Britain.†

The ships of the Saxons are thus described in Charnock's "Marine Architecture:—"The keel of their large, flat-bottomed‡ boats was framed of light timber, but the sides and upper works consisted only of wicker, with a covering of strong hides. The Saxon boats drew so little water that they could easily proceed fourscore or a hundred miles upon the great rivers. The weight was so inconsiderable, that they were transported on waggons from one river to another; and the pirates who had entered the mouth of the Seine or the Rhine, might descend with the rapid stream of the Rhone into the Mediterranean."

The form of the Saxon ships in the eighth century, or the beginning of the ninth, is to be found depicted in some of the manuscripts of

\* A term implying anything painted.

† Strutt's Chronicles.

‡ This applies only to the period of the first Saxon invasion of Britain.

that date. They seem to have been built of stout planks laid one over the other; their heads and sterns were very erect, and rose high out of the water, ornamented at top with some uncouth head of an animal, or the head of a human being rudely sculptured; they had one mast only, the top of which was also decorated with a bird, or with a human head upon which a bird of prey was seen to feed; to this mast was secured a large sail, which, from its nature and construction, could only be available when the vessel went before the wind. The ship was steered by a large oar with a flat end—somewhat resembling a gigantic spoon—passing by the side of the stern; and this was managed by the pilot, who sat in the stern, and from thence issued his orders to the mariners.

The stern of the annexed Saxon ship is ornamented with the head and neck of a horse; the two oars, one on either side, were for



SAXON SHIP, FAC-SIMILE FROM STRUTT'S "HORDA."

the steering of the vessel, instead of a rudder. Mid-ships, near the mast, is erected the cabin (in the form of a house) for the commodious reception of the voyagers. The keel runs from the stern, growing gradually broader to the prow or head of the ship, which ultimately terminates in a point, for the more ready cutting water in the ship's course. When the vessel had received her full burthen, she was sunk at least to the top of the third (nailed) board, so that the prow itself was nearly, if not quite, immersed in the water.



Over the prow is a projection, which was, perhaps, either for the convenient fastening of the ship's rigging, or to hold the anchor. It appears that this was a sailing vessel only, for there are no holes or places made for the using of oars.

The nine ports under the command of the Count of the Saxon Shore were:—1, Branodunum, *Brancaſter*; 2, Garionnonum, *Bury Caſtle*, near Yarmouth, both on the Norfolk coaſt; 3, Othona, *Ithan-caſter*, near Maldon, ſince overflowed by the ſea; 4, Regrebiūm, *Recluver*; 5, Rutupæ, *Richborough*; 6, Dubriſ, *Dover*; 7, Lemanæ, *Lime*—the laſt four on the coaſt of Kent; 8, Anderida, *Haſtings* or *East-bourne*, in Suſſex; 9, Portus Adurnus, *Portsmouth*, in Hampſhire. Theſe nine ports were gariſoned by two thouſand two hundred foot, and two hundred horſe—a ſufficient evidence of the ſtrength of the piratical invaders by which the ſhipping and the ſettlements on the coaſts were perpetually haraſſed.

The veſſels which the Saxons generally uſed upon their piratical expeditions were very light, and ſo built as to weather out a ſtorm in which a larger ſhip would be in danger; they were generally ſwift ſailers, ſo that the pirates could ſuddenly aſſail the foe, and as eaſily eſcape if they were overpowered.\*

In the reign of Ethelred ſeveral good laws were made for the ſecurity of the perſons and effects of merchant navigators, when, by contrary winds, they were obliged to put into ports, or were wrecked upon the coaſts.

Nothing can more fully demonſtrate the low ſtate of the ſhipping and trade of England at the acceſſion of Alfred to the crown, than the feebleneſs of the firſt fleet with which he encountered his enemies at ſea. After four years' preparation, he got together five or ſix ſmall veſſels, with which he put to ſea in perſon, in the year 875; and, meeting with ſix ſail of Daniſh pirates, he attacked them, took one, and put the reſt to flight.† As ſoon as he had obtained the great victory over the Danes at Eddington, he increaſed his efforts for the augmentation of the navy, and fitted out a fleet, which he partly manned with Danes, who were excellent ſailors, and with theſe he fought battles with other piratical Daniſh fleets. He put many of his own ſubjects on board theſe veſſels, to keep the Danes in ſubjection, and alſo to acquire ſkill in navigating and commanding ſhips in battle. Still further to increaſe the number of his ſeamen, he invited foreigners who were ſkilled in ſea-

\* Strutt's Chronicles.

† Saxon Chronicle.

manship to enter into his service, and gave them every possible encouragement. Knowing that a foreign trade was the best nursery for seamen, he encouraged his subjects to embark in it, and lent them money and ships for the purpose. By these means Alfred raised so great a naval power in a few years, that he was able to secure the British coasts from the piratical spoliations which had previously crippled the prosperity of the island.

The ships called *keels*, or *cogs*, were clumsily built, being low, short, and broad, which made them very hard to work, and slow. Alfred, taking these defects into consideration, caused some vessels to be built of an improved construction. His new ships were twice as long as the keels, and much higher, which not only made them more beautiful in appearance, but also much more commodious for either war or commerce; for they sailed much swifter, and their motion in the water was more steady and certain. Some of these vessels had sixty oars, and others more; therefore they could not have been of insignificant size.

Alfred also encouraged expeditions for making maritime discoveries. There is still extant a very curious relation of one of these voyages of discovery, undertaken for the British king by one Ochter, a Norwegian. The simplicity of this document, which was drawn up for the king's information, upon the return of the expedition, will show how little was then known of the great world, and how timidly the boldest adventurers went about the work of discovery.

"Ochter informed his lord, Alfred the king, that his habitation was to the north of all the other Normans, in that country which is washed on the north by the western ocean. He said that country stretched very far towards the north, and was quite destitute of inhabitants, except a few Finnnians, who lived in the winter by hunting, and in the summer by fishing. He added, that he had conceived a strong desire to examine how far that country extended towards the north, and whether any people resided beyond that desert; and with these views had sailed directly northward, keeping the desert land on his right hand and the open sea on his left, for three days, when he was as far north as the whale-fishers used to go. After that he sailed other three days in the same course, when he found the land make a turn towards the east; but whether this was a great bay or not he could not certainly tell; this he knew, that he waited there some time for a north-west wind, by which he sailed eastward four days

near the shore. Here again he waited for a north wind, because the land turned directly southward, or the sea ran into the land that way, he knew not which; but he sailed southward as far as he could sail in five days close by the coast, when he came to the mouth of a great river, which ran up far into the land. In this place he put an end to his voyage, not daring to sail up that river, because the country was well inhabited on one side of it. This, he said, was the only well-peopled country he had met with after he had left his own home. For during the whole voyage the land on his right hand was all a desert, having in it only a few wondering fishers, fowlers, and hunters, who were all Finnnians; on his left hand all was open sea.

“He said further, that the Bearms told him their country was well inhabited, but he durst not go on shore. The land of the Firfinnnians was almost a desert, being inhabited only by a few fishers, hawkers, and hunters. The Bearms, he said, told him many things both about their own country and the neighbouring countries; but whether these things were true or not, he could not tell, because he had not seen them himself. He thought that the Finnnians and the Bearms spoke nearly the same language.”

Athelstan, son of Alfred, took still more pains to increase his fleet, and made successful trading the road to honour. By one of his laws he decreed, that *if any mariner or merchant so prospered as to make three voyages over the high seas in a ship with cargo of his own, he should thenceforth be advanced to the dignity of a Thane, and entitled to the same privileges.*

Athelstan, for the encouragement of commerce, established mints in such large towns as enjoyed any considerable foreign trade. The principal of these towns were London, Canterbury, Winchester, Rochester, Exeter, Lewes, Hastings, Chichester, Southampton, Wareham, and Shaftesbury. It will be seen that very few of these towns were sea-ports, though they enjoyed communication with the sea by rivers.

After the accession of King Canute, and when the wars between the Danes and the English subsided, trade began to flourish; and such was the tranquillity of the times, that forty ships only were kept at sea to protect trade and guard the coasts, and this number was soon after reduced. The ships that Canute had kept at sea during his reign were supported at a moderate expense; but his successor, Harold,



raised the wages of the sailors, giving to every common seaman eight mancusses,\* and to every commander twelve mancusses yearly, out of which they were to provide themselves with every necessary. Hardicanute, who succeeded Harold, raised the number of ships to sixty, and gave the same wages as his predecessors, the payment of which caused the ship-tax to be so heavy, that it gave rise to occasional tumults. From this time to the death of Harold II., 1066, the naval and merchant marine power of Great Britain gradually increased, and, upon the arrival of the Duke of Normandy, had attained a prosperity never previously equalled.

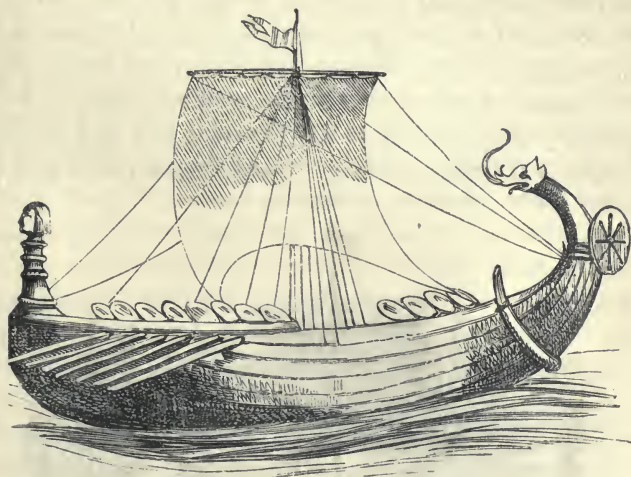
The Danes were very formidable on the sea, and greatly harassed the coasts both of England and France. Their vessels were commonly rowed by twelve oars; but they had others more capacious, some of which, in the eleventh century, are said to have been capable of holding a hundred and twenty men. The northern kings often built vessels of an extraordinary size. Harold Horfayre built one which he called the *Dragon*, of enormous bulk.

The ships in which Sweyn, the Danish pirate, made his descent upon the coast of Norfolk, A.D. 1004, are thus described by Strutt:—"Each vessel had a high deck, and bore a distinctive emblem, indicating its commander, which it may be presumed was similar in its object to the banners of subsequent chieftains. The prows of the ships were ornamented with figures of lions, bulls, dolphins, or men made of copper, gilt; and at the mast-heads of others were vanes in the shape of birds with expanded wings, showing the quarter whence the wind blew. Their sides were painted with various colours; and the shields of the soldiers, of polished steel, were placed in rows round the gunwales."

The fleet of the Conqueror has been variously said to have consisted of 896 and 696 ships. Richard I., when on his expedition to the Holy Land, had in his train thirteen *buccas*, which were ships with triple sails, besides one hundred ships of burthen, and fifty galleys, each having a triple bank of oars. The *buccas* appear to have been vessels of the largest size; and in the greatest fleets described by the Norman writers, we meet with not more than twenty or thirty at most, which always took the lead. The *buccas* had three sails, the other vessels but one. The ships of burthen, distinguished by the names of *carikes* or *mulks*, were also large vessels. The *galleys* were of two sorts, some

\* A mancus was worth about eight shillings sterling.

sailed and rowed, others rowed only. The larger galleys were large enough to carry sixty men in armour, besides 104 men who rowed, and the sailors; some of them had triple banks of oars, one over the other. The *buccas* were flat-bottomed boats, used chiefly to convey troops to the shore in shallow waters.



NORMAN SHIP, FROM BAYEUX TAPESTRY.

Camden, in his "Britannia," gives the following account of the origin of the Cinque Ports:—"King William the Conqueror, looking upon Kent as the key of England, set a Constable over Dover Castle; and, in imitation of the ancient Roman custom, constituted him Governor, *i. e.*, Warden of five ports, viz., Dover, Hastings, Hythe, Romney, and Sandwich, to which Winchelsea and Rye are annexed as principal ports, and some other little towns as harbours only. And because they are obliged to serve in the wars by the sea, with each five ships, they enjoy many and large immunities; such as—First, freedom from subsidies. Secondly, from wardship of their children, as to body. Thirdly, from being sued in any courts but within their own towns. Fourthly, such of their inhabitants as have the name of Barons support the canopy at the coronation of the kings and queens of England; and the Lord Warden of the Cinque Ports has within his jurisdiction, in several cases, the authority of Admiral, and other privileges." According to Hakluyt, in the year 1278, it was stipulated, "That whenever the king goes beyond sea, the Cinque Ports ought to attend him with fifty-seven ships, each having twenty armed soldiers, and to maintain

them at their own cost for the space of fifteen days." In the year 1297 King Edward I. directed a precept "To the Barons and good men of the port of Hastings, that, on account of certain urgent affairs, relating to us and to our faithful subjects, you get ready, and send to our port of London, your whole service of shipping, well supplied with arms, &c., so as our service be by no means retarded. [The number of ships, and the ports by which they are to be sent, are then specified, and the precept proceeds.] We also desire of you, that over and above the before-named service which you are bound to us, you do send to us all your other shipping, as well of forty tons, as of upwards of forty tons of wine [meaning tons by wine measure] well furnished as aforesaid; which last demand, however, above your wonted service, shall not be drawn into consequence hereafter."



SHIPS OF THE THIRTEENTH CENTURY.

In the year 1304 King Edward I. lent to Philip of France, for an expedition against the Flemings, twenty ships, to be assembled 'at Sandwich, and to be *picked out from amongst the best and largest* of those of the several ports of London, Sandwich, Winchelsea, Romney, Hythe, Rye, Faversham, Hastings, Southampton, and Portsmouth; each of which ships were to be manned with at least forty stout men, and well furnished with all requisites for war. The small complement of men for each of those ships sufficiently demonstrates the meanness of ships of war in those days. At this period, and for 200 years after, the kings of England had no ships of war that were properly their own. The ships now mentioned appear to have been hired of their owners, and were doubtless the best and largest that could be procured in England.



In 1335 a precept, directed from King Edward II. to the Mayor and Sheriffs of London, directed them to "Take up all ships in their port, and of all other ports of the kingdom, of the burthen of *forty tons* and upwards, and to furnish the same with armed men, and other necessaries for war, against the Scots."

In the year 1339, a declaration of the House of Commons affirmed that, "for keeping of the sea, the Cinque Ports, or other haventowns, who are discharged from all other contributions, should do the same aid for their coasts. And that such as have lands thereby, be bound to keep thereon twenty-one ships by the Cinque Ports, and nine by the Thames; to bear half the charges themselves, the other half by the Privy Council." This declaration probably means, that when the Cinque Ports were dismissed from direct services to the crown, they should be bound to protect the coasts. The apportioning of one-half of the expense to the Privy Council, seems to be one of the first steps towards the recognition of a royal navy.

About the year 1340, large trading ships begun to carry cannon, to protect themselves from pirates.

King Edward III.'s fleet, when engaged in the siege and blockade of Calais, which lasted about eleven months, consisted of 738 English ships, carrying 14,956 mariners, being but twenty men to each ship on an average; each having fourpence per day for their pay, being about twelvepence in value of our modern money. There arrived also, by way of aid, fifteen ships, and 459 mariners, from Bayonne, which is but thirty men to each ship on an average. Seven ships and 184 men came also from Spain, being on an average twenty-six sailors per ship; one ship and twenty-five men from Ireland; fourteen ships and 130 men from Flanders, scarcely ten men per ship; and one ship and twenty-four men from Guelderland; in all thirty-eight ships, and 805 mariners from foreign parts. This affords a pretty good clue to the dimensions of the largest ships of the fourteenth century. It also shows that the English navy was, as indeed it continued to be for 200 years afterwards, a sort of naval militia, each British port being compelled to contribute according to certain conditions, and that when external aid was required, ships were hired wherever they could be obtained. The actual weakness, not only of the navy, but of mercantile shipping, at this period is shown by the fact that, in the year 1372, the English fleet being surprised and defeated by a superior French force,

Edward III. found it necessary to direct "all the ships in the several ports, east, west, north, and south, to be taken up, of the burthen of twenty tons and upwards." These were "to repair to Portsmouth and Southampton, to join the expedition against France."

In the year 1365, a ship of Aberdeen, in Scotland, belonging to the bishop of that city, laden with merchandise, was driven by a storm from her anchors in the roads of Aberdeen as far as Great Yarmouth. The people on the coast seized on the ship and goods as a wreck, although there were two men left alive and on board. Upon the Scottish ambassador's claiming the ship and cargo, King Edward directed, that if there were any living creature found in the said ship, the vessel and all its cargo should be delivered to the owners; "This," said the king, "being agreeable to the laws and customs of our kingdom."

In 1394, a mandate of Richard II. again commanded the subsidies of the Cinque Ports. The previous subsidy was to "reconnoitre the coast of Berwick," in consequence of a war with Scotland. Upon



ONE OF THE CINQUE PORTS' SHIPS.

this occasion, as the king expresses it in his mandate, "we have ordained a great naval armament for our present voyage to Ireland; we therefore direct the said Cinque Ports to attend us at Bristol." The object of the "great naval armament" was to suppress a rebellion in the sister country. This royal mandate set forth the pay to be given to the different classes of mariners:—"1. The master of each ship shall have sixpence [or

fifteenpence of our money] per day. 2. The constable the like wages. 3. Each of the other men threepence [or sevenpence-halfpenny of our money] per day." The ships and men were to be at the expense of the Cinque Ports for the first fifteen days, and at the expense of the crown after that time.

In the eighth volume of Rymer's "*Fœdera*," we find an account of King Henry IV.'s "further preparations for war." The king issues mandates to a number of towns to build and fit out certain

vessels for sea service, called *barges* and *ballingers*. The first, which appear to have been the largest and most costly, were to be supplied by the larger towns, and the ballingers by the smaller ones. Inland towns were commanded to unite with sea-ports, and jointly fit out one barge, or one ballinger.

King Henry V., for his invasion of France, hired ships from Holland and Zealand. He also directed all English ships of twenty tons burthen, and upwards, to attend him. His fleet numbered 1400 sail of ships, hulks, barges, etc.

About the year 1449, one John Taverner, of Hull, "built a ship as large as a great carrack, or larger." King Henry VI. granted that "the said ship then lying in the river Thames, on account of its unusual largeness, shall be called the *Grace Dieu Carrack*, with a license to the said John Taverner to lade thereon and export wool, tin, skins, leather, and other merchandise, from the ports of London,



SHIP OF THE FOURTEENTH AND FIFTEENTH CENTURIES.

&c., belonging either to English or foreign merchants, and freely to carry the said merchandise through the Straits of Morocco into Italy, he paying alien's duty for the same, and upon firm expectation that he would, in return, bring home such merchandise of other nations as were most wanted in England, such as bow-staves, wax, etc., whereby a great increase of the duties and customs to the crown would ensue, and much gain to the subjects."

The largest ship upon record down to this period (1455) appears to have been a Swedish vessel:—"King Henry VI., at the request of



Charles, King of Sweden, granted a license for a ship of the burthen of 1000 tons or under, laden with merchandise, and having one hundred and twenty persons on board, to come to the ports of England, there to dispose of her lading, and to relade back with English merchandise, paying the usual customs." Thus the people of the Hanseatic ports had obtained vessels of great dimensions prior to either the English or the French. One William Canning, of Bristol, who forfeited the king's peace by having committed piracies upon the high seas, had at a previous date obtained, either by purchase or robbery, from the Hanseatics, ships of much larger burthen than were common to the British seas. He had obtained in all "two thousand four hundred and seventy tons of shipping, among which there was one ship of nine hundred tons burthen, another of five hundred tons, one of four hundred, and the rest smaller." Being condemned to pay 3000 marks as a fine for his piratical exploits, King Edward IV. took his ships in lieu of the fine, and forgave the offence!

In 1470, seven Spanish vessels, laden with iron, wines, fruits, wool, etc., bound for Flanders, were captured by certain English ships. The Spanish owners complained to King Henry VI., and moved for redress. They deposed upon oath the burthen and the value of their ships, and the prices which the merchandise would have realized in Flanders. The particulars are interesting and suggestive:—

One ship of 100 tons and her furniture, valued at	. .	£107 10 0
One „ of 120 tons, at	. . . . .	110 0 0
One „ of 110 tons, at	. . . . .	140 0 0
One „ of 120 tons, at	. . . . .	180 0 0
One „ of 40 tons, at	. . . . .	70 0 0

So that the highest value of any one of these ships was but thirty shillings per ton, furniture included.

In the thirteenth volume of the "Fœdera" there is an indenture in English, between King Henry VIII. and his admiral, Sir Edward Howard, which affords an insight into the manner of fitting out fleets of war in those times (1512). There were to be 3000 men "armed for sea war;" and were allotted to 700 soldiers, mariners, and gunners, in King Henry's ship, the *Regent*. The 3000 men consisted of the captains of the eighteen English ships, 1750 soldiers, and 1232 mariners and gunners. The admiral was to have, for the maintenance of himself in diet, and for wages and reward, ten shilling daily pay during the voyage; and each captain one shilling

and sixpence per day, or about two shillings and tenpence of our modern money. The soldiers, mariners, and gunners to have per month of twenty-eight days, five shillings wages, and five shillings more for victuals. The ships are specified to consist of the *Regent*, 1000 tons burthen; the *Mary Rose*, 500 tons; the *Peter Pomegranate*, 400 tons; John Hopton's ship, 400 tons; the *Nicholas Reede*, 400 tons; the *Mary George*, 300 tons. The rest of the eighteen ships were from 140 tons down to one of 70 tons burden. It was about this time that ships first began to be reckoned by their strength in guns as well as by tonnage; gunners being now first mentioned in the "*Fœdera*." We find a mention in Rapin's "*History of England*," that in 1512 James IV. of Scotland equipped a fleet, *in which was the largest ship that had yet been seen on the sea*. But the fleet was lost or disabled. The dimensions of the said largest ship are not given. In the same year, King Henry VIII. built the largest ship ever known in England; she was named the *Regent*, of 1000 tons, and her capacity has been already indicated by reference to the number of soldiers, marines, and gunners she was appointed to carry. The Scottish writers affirm that the *Regent* was but a copy of the great ship of James IV. of Scotland. Mr. Burchet, in his "*Naval History*," states that the *Regent* engaged a French ship, the *Cordeliere*, before Brest. The latter was the largest ship of the French Fleet. They were in close engagement, when the French ship took fire, communicated the flames to the *Regent*, and both were destroyed. Henry, to repair the loss of the *Regent*, built a larger vessel which he named the *Henry Grace Dieu*. This was the first English *two-decker*.

According to Wheeler, who wrote the "*Treatise of Commerce*," 1601, there were not, sixty years before he wrote, "above four ships, besides those of the navy royal, that were above 120 tons each, within the river Thames." Wheeler was the secretary to the Company of Merchant Adventurers, and may be supposed to have possessed considerable knowledge of mercantile affairs.

Our English naval historians think that, down to the year 1545, ships had not port-holes; but that they carried only a few guns, which were placed upon the deck. It is certain, however, that King Harry's ship, the *Grace Dieu*, had regular port-holes. And there is a mention, by Father Daniel, of a French ship, about the same period, which carried 100 large brass cannon.

In 1650 we have the testimony of Sir Walter Raleigh to certain

improvements:—"In my own time," says Sir Walter, "our English ships have been greatly bettered. It is not long since the striking of the top-mast (a wonderful great ease to great ships both at sea and harbour) hath been devised, together with the chain pumpe, which takes up twice as much water as the ordinary did; we have lately added the *bonnet* and the *drabler*. To the courses we have devised studding sayles, top-gallant sayles, sprit sayles, top sayles. The weighing of anchors by the capstone is also new. We have fallen into consideration of the length of cables, and by it we resist the malice of the greatest winds that can blow. In extreamity we carry our ordnance better than we were wont, because our nether overloops are raised commonly from the water, to wit, between the lower part of the port and the sea. We have also raised our second decks, and given more vent thereby to our ordnance, tying on our nether overloope. We have added crosse pillars in our royall ships to strengthen them, which be fastened from the kelson to the beams of the second decke, keepe them from settling, or from giving way in all distresses. We have given longer floares to our ships, then in elder times, and better bearing under water, whereby they never fall into the sea, after the head and shake of the whole body, nor sinck sterne, nor stoope upon a wind, by which the breaking loose of our ordnance, or the not use of them, with many other discommodities are avoided."

In the year 1563 a law was passed, for the encouragement of English shipping, in which were the following curious clauses:—"That, as well for the maintenance of shipping, the increase of fishing and mariners, and the repairing of port towns, as for the sparing and increase of the flesh victual of the realm, it shall not be lawful for any to eat flesh on Wednesdays and Saturdays, under the forfeiture of three pounds for each offence, excepting cases of sickness, and also those by special licenses to be obtained. For which said licenses, obtained by peers, shall be paid one pound six shillings and eight pence to the poors box of the parish; by knights and their wives, thirteen shillings and four pence; and by others, six shillings and eight pence each. But no license is to extend to the eating of beef on those days, at any time of the year, nor to the eating of veal, in any year, from Michaelmas to the first of May. And because no person shall misjudge the intent of this statute, be it enacted, That whoever shall, by preaching, teaching, writing, or open speech, notify that any eating of fish, or forbearing of flesh, mentioned in this statute, is of



any necessity for the saving of the soul of man, or that it is the service of God, otherwise than as other politic laws are and be; then such person shall be punished as the spreaders of false news ought to be." The other clauses of this curious enactment provide that herrings, and other fish caught upon our coast, might be exported duty free; that no foreign ships shall carry goods coastwise from one English port to another; and that wines and wood shall be imported from France in English shipping alone.

According to Sir William Monson's "Naval Tracts," there were not above four merchant ships in England of 400 tons burthen at the time of Queen Elizabeth's death. In the reign of James I., the navy was increased to almost double the strength it bore in Elizabeth's reign. The largest ships at the time of the Queen's decease consisted of 1000 tons, carrying but 340 mariners and forty guns. To encourage the building of large ships, Queen Elizabeth ordered an allowance of five shillings per ton for every ship built above the burthen of 100 tons; which was revived by King James; King Charles allowed five shillings per ton for every ship built of 200 tons and upwards.

According to D'Avenant's "Discourses on the Public Revenue and Trade of England," the tonnage of the merchant ships in England, in 1688, was nearly double what it amounted to in 1660. Also that the tonnage of the royal navy, which, in the year 1660, was only 62,594 tons, was, in the year 1688, increased to 101,032 tons.

An Act of the reign of William and Mary, for encouraging the building of good and defensible ships, granted one-tenth of the tonnage and poundage duty to the builders of *three-decked* ships of at least 450 tons burthen, and thirty-two guns, for ten years ensuing, to be allowed only on or for their first three voyages.

The Eddystone rock, lying off Port Plymouth, having been experienced to be a very dangerous one, the corporation of Trinity House in 1696 began a lighthouse thereon, and completed it in three years.

In the seventh and eighth year of King William, an Act of the English Parliament for the increase and encouragement of seamen established a register of 30,000 seamen, to be ready at all times for supplying the royal navy, for a premium or bounty of forty shillings yearly. None but such registered seamen (who might be either mariners, watermen, fishermen, lightermen, bargemen, keelmen, or other seafaring men between the age of eighteen and fifty years) shall be capable of any preferment to any commission or warrant-

offices in the royal navy. They shall, moreover, have a double share or dividend for all prizes more than non-registered seamen of equal rank ; with other privileges as in the Act set forth, and particularly and solely, when maimed or superannuated, an admission into the newly-established hospital at Greenwich ; as also, if killed in the service, an admission therein for their widows and children. Sixpence per month to be deducted from the pay of all seamen for the support of Greenwich Hospital.

In 1796, the Admiralty, at the head of which was Earl Spencer, directed that the ponderous heads which disfigured our ships should no longer be continued, and that the galleries and carved work should be removed from their sterns. This was a great step towards that simplicity so much to be desired in every mechanical construction ; but it was not till 1811 that Seppings was enabled to bring the simple circular bow now employed into use ; nor till 1816 that he proposed that the same system should be adopted in the stern. These alterations met with violent opposition.

In the year 1291, the Genoese being then in the highest credit for their naval and mercantile skill and power, made an effort to effect discoveries in the western seas, which their countryman, Columbus, successfully effected two centuries later. Two galleys were despatched for this important purpose, under Theodosias Doria and Ugolin Vivaldo, who were directed to sail far westward without the Straits of Gibraltar, in quest of new lands ; but they were never heard of more.

In 1344, the isle of Madeira was first discovered. An Englishman, named Machan, having fled from England to sea with a favourite mistress, was thither storm-driven. Afterwards leaving the island in a canoe, he reached the African shore, and from thence journeying to Spain, he made known his discovery.

In 1434, Prince Henry of Portugal renewed his attempts to make discoveries southward on the west of the coast of Africa, and his expedition succeeded in passing beyond the dreaded Cape Bajador. They found the country inhabited, though previously deemed to be uninhabitable. In 1441, the Portuguese expedition succeeded in getting as far south as Cape Blanco, from whence they brought home some of the natives, and also some gold-dust out of a river. In the year 1446, they reached as far as the river Senegal ; and in 1447 to Cape de Verde, and thence to Rio Grande.

From the time of King Alfred to the year 1360, there appear to have been no attempts on the part of the English to discover new territories. There is a vague historical mention only of one Nicolas de Lerina, a friar, of Oxford, who was a great astronomer, and who is said to have made several voyages to the most northerly islands of the world, the draughts of which he presented to King Edward III.; but the records of those voyages have been lost, and it is conjectured that they extended only to Iceland and the coasts of Norway, and were made for astronomical purposes.

About the year 1410, Prince Henry of Portugal began to direct his thoughts to new geographical discoveries along the west coast of Africa, southward—a part of the watery world so long lost in obscurity, that the cape called Cape Nas, or Cape Nun, was then said to be so named, as forbidding any to venture beyond it, even as far as Cape Bajador, in about twenty-four degrees of north latitude; but finding at the last-named cape a very stormy sea, and *not daring in those days to venture far from the coasts*, not understanding the use of the mariner's compass, they *dared not attempt further discoveries*. Upon making a third attempt, the isle of Port Santo, near the island of Madeira, was reached. But this had been already discovered by an Englishman in 1344.

In the reign of Henry VII., Bartholomew Columbus came to England to present to the king some new maps of the world, and also charts for navigation, which, up to that time, had not been employed. He also laid before his Majesty the views of his brother, Christopher Columbus, respecting the existence of a vast continent across the waters of the Atlantic ocean. But these views met with no encouragement from the English court; with the king, the invasion of a neighbouring nation was a higher object than the discovery of a new world! Bartholomew therefore rejoined his brother in Spain, and England lost the honour of being patron to the greatest geographical discovery recorded in the pages of history. An attempt was subsequently made to prove that America had been discovered 300 years previously by the Welsh, under Prince Madoc. The futile claims of this pretension are thus examined by Captain Pinkerton:—

“When America was first made known, it occasioned abundance of inquiries; and, as it was natural, recalled to many people's remembrances and considerations stories which had before been deemed scarce worthy of notice; amongst the rest our nation put in its claim;



and the tale told in favour of us, as it is the earliest in point of time, seems to merit relation. This story asserts that Madoc, Prince of Wales, was the first discoverer of America, and the detail of his expedition ran thus. He flourished in the twelfth century, and was son of Owen Guyneth, Prince of North Wales. His brethren raising a civil war about the division of his father's dominions, he chose rather to go to sea with a few of his friends, and seek out new habitations, than run the hazard of what might happen. Accordingly, about the year 1170, steering due west, and leaving Ireland on the north, he came to an unknown country, where he settled a colony; and returning thence into Wales, carried a second supply of people, but was heard of no more.

"That the country he went to was really America, is more than can be thoroughly proved; but that this tale was invented after the discovery of the country, on purpose to set up a prior title, is most certainly false. Meredith ap Rees, who died in 1477, and was a famous Welsh poet, composed an ode in favour of this Madoc, wherein was contained an account of his new discoveries. Now, as this was several years before Columbus made his first voyage, we may be sure that this was really a British tradition, and no tale of a late contrivance. Some critics have endeavoured to prove that it was not America, but Greenland, to which our Welsh prince sailed. In proof of which they have observed that this country was well known in the ninth and tenth centuries, though it was afterwards lost.

"But, with submission to these great men, this story does not answer their purpose; for it is evident the course does by no means agree, since if he had sailed to that country, he could not have left Ireland to the north. There is a very ingenious discourse upon this subject, in which it is suggested that Prince Madoc landed in some part of Florida; that in process of time the colony he planted there proceeded round by land, and reached the northern parts of Mexico, which country they conquered, and were those foreign ancestors of the Mexicans, of whom we have heard so much from the Spanish writers, that have recorded the adventures of Cortes; and it is remarkable that several British words are to be found in the old Mexican tongue. If there had been really any desire in the English nation to contest the title of the crown of Spain to the country of America, it might have been undoubtedly fixed upon a much better foundation; for, in the life of Don Christopher Columbus, written by his son, in the reign

of King Henry VIII., it is expressly said, that Columbus sent his brother Bartholomew to England, to offer his discovery to King Henry VII., and he did accordingly present a map, dated the 13th of February, 1488, to that monarch; and having explained to him his brother's design, and what he proposed thereby, it was readily accepted; and Don Bartholomew was sent to invite his brother to England, with the assurance that the king would grant him all he desired. This agreement was four years before the voyage of Columbus, and therefore, had we been so much inclined to hunt for titles to this new-found country, here had been a fair pretence. But King Henry VII. was of another disposition; and though he was a prince much addicted to encourage such kind of useful undertakings, he scorned to aim at reaping the fruits of other princes' adventures; and therefore he contented himself, after missing by mere accident Columbus's discovery, with inviting other seamen of known reputation to enter his service for like purposes."

The encouragement said to have been offered to Columbus by Henry VII. rests upon a really slender foundation. Certainly there was no substantial effort made by the king to promote the enterprise, otherwise Columbus would never have continued for years to abide in Spain, struggling with every difficulty, until Queen Isabella, with true greatness and energy, favoured his enterprise, and offered her jewels to promote its accomplishment.

The history of Columbus has so great a bearing upon our present subject, that we must record its chief features. He went to sea at fourteen years of age, and was, on several occasions, under the command of an old relation, who carried on a predatory war against the Mahomedans and Venetians. About the year 1470 he settled at Lisbon, then the great resort of navigators. Here he became connected with Patestrello, who had been a distinguished navigator, which connection appears to have led Columbus to the great discoveries that immortalize his name. Having become thoroughly convinced of the practicability of the undertaking, but, at the same time, too poor to engage in it without patronage and assistance he applied to King John of Portugal. The treatment he received at this monarch's hands was singularly mean. An objection was raised to the proposed expedition, on the pretext of the heavy expenditure that would be incurred, but, in secret, a caravel was equipped, and sent in the very course pointed out by Columbus. The captain and crew, however, who were des-

patched on this expedition, were wanting in the necessary energy and perseverance, and, having tossed about many days at sea, they returned without accomplishing anything. Disgusted with the Portuguese government, Columbus set out for Spain with his son. On the road he stopped at a Franciscan convent, to beg some bread and water for his child! The superior of the convent, entering into conversation with him, was so struck by the vast extent of his views, that he gave the wanderer a letter of introduction to the Spanish court. After many years of fruitless application, Columbus was on the point of transferring his plans to the King of France: but a first application being made to Isabella, Queen of Spain, she became so interested in the expedition, that she at length succeeded in overcoming the indifference of King Ferdinand, and even offered her own jewels to defray the expenses of the voyage. His brother, Bartholomew, had previously gone to England, but had met with no practical encouragement. At length stipulations were signed by Ferdinand and Isabella at Granada, on the 17th of April, 1492.

Having been appointed admiral of the lands he hoped to discover, he sailed on the 3rd of August, 1492, from the Bar of Saltes, near Palos, with three vessels and ninety men, who were partly pressed into the service. Two of those vessels were caravels, or light barges, no better than our coasting craft. On his arrival at the Canaries, he had scarcely time to refit when he received an account of a Portuguese expedition having been sent to intercept him; he therefore sailed in haste on the 6th of September. When out of sight of land, the courage of the men began to fail, and the Admiral found it necessary to hold out to them the most brilliant prospects of the countries to be discovered. In order to diminish their apprehensions, he pretended that they had sailed only fifteen, and not eighteen, leagues, that day; and he continued the same method, in order that they should not think themselves so far from Spain as they really were.

On the 12th of September he discovered the trunk of a large tree floating; but on the 13th, a circumstance occurred enough to appal the most courageous adventurer. This was the variation of the needle, when at about 200 leagues west of the island of Feiro. He forbade it to be mentioned to the crew till it was noticed also by the pilots, when Columbus succeeded in allaying their terrors by ascribing it to the movement of the Pole star. Continuing their course steadily to the westward, they frequently met indications of approaching land, as



weeds and flights of birds; but, although their expectations were thus kept up, every day added to their discontent at being so far removed from land. It is also to be recollected that in some of the discussions on the enterprise, before the expedition sailed, it had been asserted by high authorities that, as the world was a sphere, sailing to the west would bring them downwards, and that, in order to return, they would have to ascend, which would be impossible. Accordingly, on the 20th of September, when the wind veered to the south-west, the crews were cheered, as it seemed to show a probability of their return. Discontent, however, progressively increased, and on the evening of the 10th of October, there were violent exclamations against the obstinacy of the Admiral; and the seamen at length began to talk of throwing him overboard, and of directing their course homeward. Columbus, sometimes by threats, and at other times by encouragements, kept them to their duty. Once a cloud was mistaken for land, and they were desirous that he should at least steer sideways; but he, taking advantage of the wind, steadily continued his course to the westward. Once, when on the point of open mutiny, they were restrained by the appearance of a flight of sparrows and other birds. These manifestations of land soon afforded hope even to the most dejected, and on the 11th a green rush was seen, and a branch of a thorn full of red berries, which seemed to have been newly broken off. After the evening prayer, the Admiral ordered a careful look-out, and proclaimed a reward to the first who should see land. He himself remained on the high stern of his vessel, and at about ten at night saw a glimmering of light which disappeared; but at two in the morning the caravel "Pinta," which was a-head, gave the signal of land. All the ships now lay-to till day-break, when they perceived an island fifteen leagues in length, with a flat surface, full of trees, a lake in the middle, and numerous inhabitants. This was San Salvador, one of the Bahama islands.

The naked and painted natives, when they had recovered from their fright, regarded the white men, by whose confidence they were soon won, as visitors from the skies which bounded their horizon; they received from them, with transport, toys, and trinkets, fragments of glass and earthenware as celestial presents possessing a supernatural virtue. They brought in exchange cotton, yarn, and cassava bread. On the 24th of October, Columbus set out in quest of gold and Cipanjo. After discovering Conception, Exuma, and Isla Larga, Cuba broke

upon him like an Elysium. He no longer doubted that this beautiful land was the real Cipanjo. When this delusion was over, he fancied Cuba (which to the time of his death he supposed to be part of the mainland of India), to be not far from Mango and Cathay. He next took Hayti or San Domingo for the ancient Ophir, the source of the riches of Solomon; but he gave it the Latin denominative of Hispaniola, from its resemblance to the fairest tracts of Spain. Leaving here the germ of a future colony, he set sail homeward on the 4th of January, 1493. A dreadful storm overtook him on the 13th of February. Fearing the loss of his discovery more than the loss of his life, he retired to write two copies of a short account of it. He wrapped them in wax, enclosed them in two separate casks, one of which he threw into the sea, and the other he placed on the poop of his vessel, that it might float in case he should sink. Happily the storm subsided, and at last he landed triumphantly at Palos on the 15th of March, 1493. In his journey through Spain he received princely honours all the way to Barcelona, where the court had gone. His entrance here with some of the natives was a triumph as striking and more glorious than that of a conqueror. Ferdinand and Isabella received him seated in state, rose as he approached, raised him as he knelt to kiss their hands, and ordered him to be seated in their presence. On the 25th of September, 1493, he left Cadiz on a second expedition, with seventeen ships and 1500 men. He discovered the Carribee Islands, Porta Rico, and Jamaica; and after repeated mutinies of his colonists, and great hardships, he returned against the trade winds to Cadiz, June 11, 1496. Having confuted all the calumnies that had been uttered against him, he embarked on the 30th of May, 1498, at San Lucar de Barrameda, on a third expedition, with only six vessels. In this voyage he discovered La Trinidad, the mouth of the Orinoco, the coast of Paria, and the Margarita and Cubagua islands. On the 14th of August he bore away for Hispaniola, to recruit his shattered health. But fresh calumnies against Columbus induced Ferdinand in July 1500 to despatch Francisco Bovadella to supersede him, and bring him back in chains. The officer who had him in charge, and the master of the caravel, would have taken the chains off, but Columbus indignantly refused to have them removed; "I will wear them," said he, "till the King orders otherwise, and will preserve them as memorials of his gratitude. He hung them up in his cabinet, and requested they should be buried in his grave. The general burst of indignation at Cadiz, which was echoed

throughout Spain on the arrival of Columbus in fetters, compelled Ferdinand himself to disclaim all knowledge of the transaction. But still the King kept Columbus in attendance for nine months, wasting his time in fruitless solicitations for redress, and at last appointed Nicholas Ovando governor of Hispaniola in his place. With a spirit unrepressed by persecution, but with a power wasted by over-exertion and sickness, Columbus sailed from Cadiz again on the 9th of May, 1502, with four caravels and 150 men, in search of a passage to the East Indies, near the Isthmus of Darien.

Being denied relief and even shelter at San Domingo, he was swept away by the currents to the north-west; he however at last reached Truxillo, whence he coasted Honduras, the Mosquito shore, Costa Rica, Veragua, as far as the point which he called El Retrete. But here, on the 5th of December, he yielded to the clamour of his crews to return in search of gold to Veragua, a country which he himself mistook for the Aurea Chersonesus of the ancients. Finally, the fierce resistance of the natives, and the crazy state of his ships, forced him, at the close of April, 1503, to make the best of his way to Hispaniola, with only crowded wrecks, which came, on the 24th of June, to anchor at Jamaica. After famine and despair had occasioned a series of mutinies and disasters far greater than any he had ever yet experienced, he at last arrived on the 13th of August at San Domingo. Sailing homewards on the 12th of September, he anchored at San Lucar on the 7th of November, 1504. From San Lucar he proceeded to Seville, where he soon after received the news of the death of his patroness Isabella. He was detained by illness till the spring of 1505, when he arrived wearied and exhausted at Segovia, to have only another courtly denial of redress, and to linger a year longer in neglect, poverty, and pain, till death gave him relief at Valladolid, on the 20th of May, 1506. His remains were honoured with solemn funeral rites, and upon his tomb was inscribed this inscription:—

“A Castilla y a Leon  
Nuevo mundo dio Colon.”\*

We must not pass over in silence the claims of another eminent navigator and geographer, to be the discoverer of the New World. Martin Beham, born at Nuremburg, in the fifteenth century, asserted the probability of the existence of antipodean worlds, and of a great

\* Rose's “Biographical Dictionary.”



western continent. Filled with this idea, he paid, in 1459, a visit to Isabella, daughter of John I., King of Portugal, at that time regent of the Duchy of Burgundy and Flanders; and having informed her of his designs, he procured a vessel in which, sailing westward, he was the first European who is known to have landed on the island of Fayal. He there established a colony of Flemings, in the year 1460. After having obtained from the regent a grant of Fayal, and resided there about twenty years, Beham applied in 1484 (eight years before Columbus's expedition), to John II., King of Portugal, to procure the means of undertaking a great expedition to the south-west. This prince gave him some ships, with which he discovered that part of America which is now called Brazil; it is said that he even went to the Straits of Magellan, which had not then been discovered. It is even asserted that Magellan made his voyage, in which he discovered the straits that bear his name, by the aid of a chart which had belonged to Beham.

That Beham rendered some very important services to the crown of Portugal, is put beyond all controversy by the recompense bestowed on him by King John, when, in 1485, he made him a knight and governor of Fayal; he is also said to have espoused the daughter of a great lord "in consideration of the important services he had performed." In 1492, crowned with honours and riches, he undertook a journey to Nuremburg, to visit his native country and family. He there made a terrestrial globe, which is looked upon as a masterpiece for the time, and which is still preserved in the library of that city. The outline of his discoveries may there be seen, under the name of Western Lands; and from their situation it cannot be doubted that they are the present coasts of Brazil and the environs of the Straits of Magellan. This globe was made in the year that Columbus set out on his expedition; therefore it is impossible that Beham could have profited by the works of that navigator, who, besides, went a much more northerly course.\*

It is not unlikely that both these navigators, living in the same age, pursued the same object almost simultaneously. It appears that Beham and Columbus were intimate friends, and eminent geographers in their day. As such they must frequently have conferred upon the great topic of their ambition. Beham's claims are founded upon many corroborative testimonies; and Columbus's accounts of his own expedition are minutely circumstantial, and apparently independent of any extraneous aid.

\* Chalmers's "Biographical Dictionary."

The mention of the mariner's compass in the account of Columbus's expedition, and the discovery by him of the variation of the needle, affords us an opportunity of making a brief digression. At whatever time the mariner's compass was invented, it is certain that it was not commonly used in navigation before the year 1420. In that year the science was considerably improved under the auspices of Henry, Duke of Visco, brother to the King of Portugal. In the year, 1485, Roderick and Joseph, physicians to John II., King of Portugal, together with one Martin de Bohemia, a Portuguese, calculated tables of the sun's declination for the use of sailors, and recommended the astrolabe for taking observations at sea. Columbus is said to have availed himself of the instructions of Martin. The account of Columbus's voyage is pregnant with interest, affording, as it does, an insight into the system of navigation prior to the use of the compass. His seamen became alarmed when they lost sight of the land, and their commander was obliged to deceive them as to the number of leagues they had sailed from the shore. The flight of a bird, or the floating of a reed, were eagerly regarded as indications of land. From this, and from other testimonies, we learn that prior to the use of the compass and of charts, ships made their voyages by coasting along the shore, and rarely ventured out of sight of land. Thus they were doubly exposed to the perils of shipwreck, by being driven ashore, or by striking upon unseen rocks; while there was no possibility of maritime discovery, since ships could never quit the cautious track along the coast.

In "Purchas's Pilgrim" we find, by an account of the voyage of Floco, a Norwegian pirate, made in the early part of the tenth century, from Shetland to Iceland, that pirates used to elude capture, by putting out to sea to a distance to which other navigators dared not venture. And these marauders adopted the expedient of taking land-birds with them, and setting them free, to ascertain whether they were a great or small distance from the shore:—"There was yet no use of the mariner's compass, wherefore Floco, leaving Hietlandia, tooke certaine ravens unto him; and when hee thought hee had sayled a great way hee sent forth one raven, which, flying aloft, went back again to Heitlandia which she saw behind. Whereupon Floco, perceiving that hee was yet nearer to Heitlandia than other countries, and therefore courageously going forward, he sent forth another raven which because she could see no land, neither before nor behind, light upon the ship again. But, lastly, the third raven was sent forth by Floco, and having for the most part performed

his voyage, through the sharpneffe of her quick sight attained the land she speedily flew thither, whose direction Floco following, beheld first the eaftern side of the island."

We are reminded, also, by the perusal of the last-mentioned work, of the dreadful ravages which were common among the crews of ships before matters of marine hygiene became properly understood, and which in small ships, which were slow sailers, difficult of management, and carrying a very limited number of men, must have produced thousands of disasters that have never been recorded:—"Being betwixt three and four degrees of the equinoctial line, my company within a few daies began to fall sicke of a disease which seamen are apt to call the scurvie; And seemeth to be a kind of dropfie. . . . . And I wish that some learned man would write of it, for it is the plague of the sea and the spoyle of mariners; doubtlesse it would be a worke worthy of a worthy man, and most beneficial for our countrie; for in *twenty years* (since I have used the sea), I dare take upon me to give account of *ten thousand men consumed with this disease.*"

There is an account of the same dreadful malady in "Commodore Anson's Voyage." The transcriber of the voyage relates that, after passing through the straits of Magellan the scurvy attacked the ship's company:—"And now, as it were to add the finishing stroke to our misfortunes, our people began to be universally afflicted with that most terrible, obstinate, and, at sea, incurable disease, the scurvy; which made a most dreadful havoc among us, beginning at first to carry off two or three a-day, but soon increasing, and at last carrying off eight or ten; and, as most of the living were very ill of the same distemper, and the little remainder, who preserved their healths better, in a manner quite worn out with incessant labour, I have sometimes seen four or five dead bodies, some sewn up in their hammocks, others not, washing about the decks for want of help to bury them in the sea." The above passage is dated the 8th of March; upon the 8th of May—that is, in a period of two months—the writer says:—"Our unspeakable distress (arising from the deplorably bad weather) was still aggravated by the difficulties we found in working the ship, as the scurvy had by this time destroyed no less than 200 of our men, and had in some degree affected almost the whole crew."

The *Trial* sloop, which accompanied Lord Anson's ship, was,



in its degree, equally affected by the scourge. Upon its arrival at the island of Juan Fernandez, the rendezvous of the squadron, thirty-four of its crew had perished, and the survivors were so weakened that only its captain, the lieutenant, and three of the men could stand by the sails.

Arrived at the island, and the means of arresting the scourge, by means of an improved diet, being within reach, we yet find that of 135 patients sent on shore sixty died within a few days.

It will be borne in mind that the squadron, under Commodore Anson, had been fitted out to cruise about and attack the Spanish settlements in South America. By various unfortunate mischances the expedition failed. But it is in point to remark that the Spanish fleet, sent out to attack them, also miscarried in its object, in the words of the author just quoted:—"In attempting to pass Cape Horn, they had been forced to put back after encountering storms and famine, besides being grievously attacked by the scurvy, which had made greater havoc among them than among us."

About the year 1496, Henry VII., perceiving his error in not listening in time to the proposal of Columbus, endeavoured to retrieve it by granting to John Cabot, a Venetian, then settled in Bristol, and to his sons, power and authority "to navigate all the parts, countries, and bays of the eastern, western, and northern seas, under our banners, flags, and ensigns, with five ships, and such and so many mariners and men as they shall judge proper, at their sole cost and charges, to discover and investigate whatsoever islands, countries, regions, or provinces of gentiles or infidels, in whatever part of the world they may be situated, which have hitherto been unknown to all Christians, with power to set up our said banners, or ensigns, in any town, castle, island, or continent of the countries so to be discovered by them. And such of the said towns, castles, or islands so found out and subdued by them, to occupy and possess, as our vassals, governors, lieutenants, and deputies, the dominion, title, and jurisdiction thereof, and of the continent so found out remaining to us, provided that out of all profits and produce arising from this expedition, the said Cabot and sons shall be obliged to pay us, for each voyage they shall so make, on their return to our port of Bristol, to which port they are hereby absolutely bound to steer, after all needful costs and charges are deducted, one-fifth part of the whole capital

gain, either in merchandise or money. The said Cabots to be free from all customs on the goods they shall import. The lands they shall discover and subdue shall not be frequented nor visited by any others of our subjects, without the license of Cabot and sons, under forfeiture," etc.

Here was a sufficient charter to the Cabots for taking possession of all the continent of North America, had they possessed resolution and means sufficient for planting what they the following year discovered, or had the king possessed spirit enough to have supported such an expedition for a national purpose; whereby the English would have been the first planters of the American continent.\*

The Cabot expedition set out in one Bristol ship and three from London, laden with various wares, and went as far as the north side of



SHIP OF CABOT'S EXPEDITION.

Labrador. Captain Fox, in his book called "The North-West Fox," printed in the year 1635, says, "he took the way towards Iceland, from beyond the Cape of Labrador, until he found himself in fifty-eight degrees and better, and thence he sailed along the shores of America, as far as the Isle of Cuba; and so returned back to England;"

\* Anderson's "History of Commerce."







where, King Henry being engaged in a war with Scotland, he found no encouragement to continue his enterprises, so that Sebastian, the most active and ingenious of the Cabots, entered into the King of Spain's service, and was instrumental in other American discoveries. The principal object of the Cabot expedition was said, by the writers of those times, to have been to discover a north-west passage to the Indies, or Spice Islands, or to Cathaia, as they then termed China, whither some travellers had gone overland in the eleventh, twelfth, and thirteenth centuries. Cabot having sailed as far north as 67°, the land which he first saw was the country between the north of the river of Canada and Hudson's Strait, which he therefore named *Prima Vista*, or first discovered. It next received the name of Cortereal, from a Portuguese, who, sailing from Lisbon, fell in with that coast in the year 1500. Herrera, in his "History of America," says that Cabot "advanced as far as sixty-eight degrees of north latitude, and finding the cold very intense, even in July, he durst not proceed any further; but he gave a better account of all those parts than any other had done."

The Cape of Good Hope was first discovered in 1493, by a Portuguese squadron under the command of Bartholomew Diaz. But Diaz merely saw it: the tempestuous aspect of the sea, produced by currents meeting from opposite oceans, deterred that navigator from completing this great discovery. Diaz gave to it the name of the "Cape of Tempests;" it was believed at the time to be impossible to sail round it. The King of Portugal, some few years afterwards, determined to follow up the discovery, and sent ships, under the command of Vasco di Gama, to try to pass beyond the Cape. Di Gama surmounted the difficulties which had deterred his predecessors, and, in the year 1497, *European ships for the first time entered the Indian seas*, and trade commenced with the Indies, and the Islands of the Indian Archipelago, by the Indian Ocean, instead of the Mediterranean Sea, and the Arabian Gulf, interrupted by the Isthmus of Suez.

The voyage of Di Gama, like that of Columbus, was one of those bold adventures which only a man of great intelligence, high courage, and strong determination could have undertaken and completed. The most experienced mariners at Lisbon considered that he was going to certain destruction. Like Columbus, he had to contend with the mutinous despondency of his crews, and his difficulties were increased by tempests which occurred at the Cape. But his courage and deter-



mination were superior to all obstacles : his ships doubled the Cape on the 20th November, 1497, and having proceeded as far as Calicut, doubled the Cape again in April, 1499, and returned to Lisbon in a little less than two years and two months. For a long time the approach to the Cape was regarded with dread. A voyager of the seventeenth century remarks, "the Cape of Good Hope might better be called the Cape of Death, because of the continual fear of death they are in who come near it. For the space of eight days we were tossed in a terrible manner."\*

The reason why no earlier attempts had been made to sail around the African continent are thus lucidly explained by Dr. Roberts:—"While the operations of their Indian trade were carried on within a sphere so circumscribed, the conveyance of a cargo by the Arabian Gulf, notwithstanding the expense of land carriage, either from Elath to Rhinoculura, or across the desert to the Nile, was so safe and commodious, that the merchants of Tyre and Alexandria had little reason to be solicitous for the discovery of any other.

"The situation of both these cities, as well as that of the other considerable commercial states of antiquity, was very different from that of the countries to which, in later times, mankind have been indebted for keeping up intercourse with the remote parts of the globe. Portugal, Spain, England, Holland, which have been most active and successful in this line of enterprise, all lie on the Atlantic Ocean (in which every European voyage of discovery must commence), or have immediate access to it. But Tyre was situated at the eastern extremity of the Mediterranean; Alexandria not far from it; Rhodes, Athens, Corinth, which came afterwards to be ranked among the most active trading cities of antiquity, lay considerably advanced towards the same quarter in that sea. The commerce of all these states was long confined within the precincts of the Mediterranean, and in some of them never extended beyond it. The pillars of Hercules, or the Straits of Gibraltar, were long considered as the utmost boundary of navigation. To reach them was deemed a signal proof of naval skill; and before any of these states could give a beginning to an attempt towards exploring the vast unknown ocean which lay beyond it, they had to accomplish a voyage (according to their ideas) of great extent and much danger. This was sufficient to deter them from engaging in an arduous undertaking, from

\* Voyage to Argo, by Angelo and Carli, 1666.



which, even if attended with success, their situation prevented their entertaining hopes of deriving great advantage.

“But could we suppose the discovery of a new passage to India to have become an object of desire or pursuit to any of these states, their science, as well as practice of navigation was so defective, that it would have been hardly possible for them to attain it. The vessels which the ancients employed in trade were so small as not to afford stowage for provisions sufficient to subsist a crew during a long voyage. Their construction was such that they could seldom venture to depart far from land, and their mode of steering along the coast (which I have been obliged to mention often) so circuitous and slow, that from these, as well as from other circumstances which I might have specified, we may pronounce a voyage from the Mediterranean to India by the Cape of Good Hope to have been an undertaking beyond their power to accomplish, in such a manner as to render it, in any degree, subservient to commerce.”

This discovery was followed in 1522 by another of equal importance and interest. Fernando Magalhaen, a Portuguese, had formed, in conjunction with a countryman, Ruy Falero, the design of finding a western passage to the East Indies and the Moluccas, or Spice Islands, which were regarded by the Spanish and Portuguese as offering an important field for extended commerce in their rich productions. Like all such great enterprises, it lay in abeyance for a time—was rejected by Emmanuel, King of Portugal, upon the ground that it would open the way for other nations to the East Indies, the trade of which the Portuguese desired to monopolize. This, however, kindled the rivalry of the King of Spain, and in the month of September, 1519, Magalhaen sailed from San Lucar de Barremeda, his expedition consisting of five ships and 236 men. The Portuguese officers under his command soon displayed a spirit of insubordination, deeming it to be derogatory to their honour to be directed by an alien. Magalhaen discovered that three of the captains had formed a conspiracy against him, and the plot was so dangerous to his object and safety, that he found it necessary to execute two of the captains, and to turn another ashore among the wild Indians on the Brazilian coast, together with a priest who had encouraged the plans of the conspirators. This done, he proceeded on his voyage, and, on the 21st of October, 1520, having been out above a year, he discovered the mouth of the Straits of Patagonia, which he at once entered, and to which he gave his name.

The solemn grandeur of the rocky cliffs and mountains which form the walls of this narrow and perilous passage, with little variation, for a distance of 350 miles, was sufficient to appal the hearts of the crews, who knew not to what dangers they were approaching. Having



FIGAFETTA'S CHART OF THE STRAITS OF MAGALHAEN.

sailed about 150 miles in the strait, they discovered an arm of it branching off from the main channel. Magalhaen ordered one of his ships to explore this, and bring him an account of it. The seamen, being parted from the company of their commander, mutinied against the captain, deserted the expedition, and returned to Spain. Magalhaen, finding that the ship did not return, and suspecting the cause, proceeded through the strait, and entered the South Sea with only three ships, one having been previously wrecked. *These were the first European ships that had entered the great Southern Ocean, upon the waters of which Nunez Balboa had, in the year 1513, gazed with wonder, after a perilous march across the Isthmus of Panama.* When Magalhaen looked upon the vast expanse of waters before him, he shed tears of joy. He gave to the Southern Ocean the name of "the Pacific," on account of the calmness prevailing in that watery region. The last land of the strait he called Cabo Deseado, or Cape Desire,



because it was the end of his desired passage to the South Sea. Wishing to explore the great ocean which he had been the first to enter, he steered in a west-north-west direction, and sailed three months and twenty days without seeing land. Famine and disease overtook his crews; they were compelled to eat leather, torn from the masts and rigging, and to drink water that had become putrid under the heat of the torrid zone. Nineteen men died, and thirty were helpless. After sailing 1500 leagues, in the face of famine and death, he found a small island in latitude 88° south. Having obtained some relief there, he held on his course until, in about 12° north latitude, he came to a group of islands which he named De los Ladrones, or of *thieves*, because the wondering natives, amazed at the sight of the ships, flocked around them in their canoes, and going on board stole everything they could lay hold of, regarding the meanest article of manufacture as a prize of enormous value.

In these early expeditions, the amazement of savages upon seeing ships and strange people approach their coasts, scarcely surpassed the wonder of adventurous explorers at the novel objects which met their sight, and the dread with which the common mariners regarded expeditions into unknown seas. Hence we can understand why the crews of Columbus, Di Gama, and Magalhaen were alike mutinous, and disposed to take every chance of flying from the perils of their voyages.

Among Magalhaen's company was a gentleman of Vicenza, Cavallero Antonio Pigafetta, who wrote an account of the voyage, and from whose notes we may gather an insight into the feelings of the more intelligent members of the exploring party. Pigafetta thus explains his motives for joining the expedition:—"As from the books I had read, and from the conversation of learned men who frequented the house of the Bishop and Prince of Teramo, I knew that by navigating the ocean wonderful things were to be seen, I determined to be convinced of them by my own eyes, that I might be enabled to give others the narrative of my voyage, as well for their amusement as advantage, and at the same time acquire a name that should be handed down to posterity."

He states that Magalhaen\* was cautious of disclosing the fact that

\* Pigafetta writes Magaglianes, the Portuguese Magalhaens, the Spaniards Magallenes, the French Magellan.—*Amoretti*. Each of these nations has altered the orthography to preserve the sound of his name. The English, on the contrary, have neither preserved the sound nor the original mode of spelling of the Portuguese



he intended to take a course yet unexplored by mariners, lest it might have the effect of disheartening his crews. The expedition arrived at an island called Teneriffe, where they heard of a singular phenomenon—"That it never rains, and that the island has neither spring nor river, but that it produces a large tree, the leaves of which continually distil excellent water; this is collected in a pit at the foot of the tree, and hither the inhabitants go for what water they want, and all the animals, tame and wild, to quench their thirst. This tree is perpetually encircled by a thick mist, which doubtless supplies its leaves with water."

Sailing directly south, "We saw birds of many kinds. Some appeared to us to have no rump; others make no nests for want of feet; but the female lays and hatches her eggs on the back of the male in the midst of the sea. There are some which live on the excrements of other birds; and I have myself oftentimes seen one of these birds pursuing another without interruption until it voided its excrement, upon which it seized with avidity."

Two of these marvels are explained by the existence of a water-fowl having feathered legs, and of the young, which are hatched on shore, getting on the back of the mother when in the sea; the other relates to birds which watch for the divers, and chase them to seize the fish which they bring up.

In the Brazils they discovered "hogs, which seemed to have their navel on the back." They found also, "cannibals of gigantic size, whose voice was as loud as the bellowing of a bull." "This man was of such immense stature that our heads scarcely reached to his waist." They found an animal which "had the head and ears of a mule, the body of a camel, the legs of a stag, and the tail of a horse."

The inhabitants of one of the islands visited "had such large holes in their ears, and the ends of them were drawn down so much, that one might thrust an arm through the orifice." They were told, "that in these seas are birds of a black colour, resembling our crows, which, when the whale appears upon the surface of the water, watch the moment it opens its mouth to fly into it, and thence proceed to pluck out its heart, which they carry away with them to some other spot to feed upon. The only proof they have, however, of this fact is their having seen this bird feeding on the heart of the whale, and their finding the whale dead, without a heart."

name, but have adopted the orthography of the French: following the practice of other nations, if the sound were preserved, the name should be written in English Maghelyong, or Maghelyawnes.—*Note by the Translator of Pigafetta's Voyage.*

They found a tree, the leaves of which had feet, and when they dropped from the tree walked about. "I kept one in a box for nine days; on opening the box at the end of this time, the leaf was alive, and walking round it. I am of opinion they live on air." They "likewise caught a fish, the head of which, resembling that of a hog, had two horns. The body was clothed with a bony substance, and on its back was a kind of saddle." Pigafetta repeatedly alludes to the *Corpora Sancta* saving them from wreck. "The whole squadron nearly experienced shipwreck, owing to the furious winds with which it was assailed, and which occasioned a very rough sea; but God and the *Corpora Sancta* (that is to say, the lights which shone on the summits of the masts) brought us succour, and saved us from harm." "On Saturday, 26th October, just after the close of day, we experienced a hurricane, during which we took in our sails, and prayed to God for protection. Hereupon we saw our three saints settle on our masts, who dispersed the darkness. They remained there upwards of two hours; St. Elme on the mainmast, Saint Nicholas on the mizen, and St. Clare on the foremast. In gratitude for the favour they had done us, we vowed them each a slave, and accordingly made them an offering each of one."\*

Their old pilot from the Moluccas told them of an island called Arucheto, "the inhabitants of which, men as well as women, are not more than a cubit high, and have ears as long as their body; so that when they lie down to rest, one serves as a mattress to lie upon, and the other as a coverlid. We would willingly have visited this island, but were prevented by the shallows and currents." The same old pilot told them of "an island called Ocoloro, below Java, which is peopled by women alone, who are rendered pregnant by the wind. Should they produce a boy, they kill him immediately; if a girl, it is preserved. If a man at any time presumes to visit the island, they put him to death." They learned also of the existence of birds so large that they were "able to fly away with a buffalo or an elephant."

Such were the wonders seen and heard of by the early explorers. They may be fairly acquitted of any desire to exaggerate. Their powers of observation and judgment were immature—they were bewildered by the appearances of things completely new to them: hence they saw giants in painted savages of high stature, walking leaves in an insect having leaf-like wing-cases; and the forms of saints in the Auroras, or other electric phenomena, of the skies. Kings and queens listened

\* The meaning of the latter sentence is, probably, that they devoted to the poor a sum equal to the value of a slave.

with interest and awe to these narratives. "I went to Vaglaiadolid," says Pigafetta, "where I presented to His Sacred Majesty, Don Carlos (Charles V.), neither gold nor silver indeed, but things more precious in his eyes. Afterwards I travelled through Spain to France, where I presented different articles from the other hemisphere to the Queen Regent, mother of the Most Christian King, Francis I."

Unfortunately, Magalhaen, the great projector of this expedition, never lived to accomplish the first circumnavigation of the globe, which is associated with his name. In his zeal for the spread of Christianity, he had converted some of the island kings, telling them that, by planting the cross upon the island, "neither storms or thunder would hereafter do them injury." He told these kings, too, that if they had any enemies, he "would willingly combine to combat them with all his vessels and warriors," and also assured them that among the other advantages that would accrue from embracing the Christian faith would be that of their being so strengthened, as with greater facility to overcome their enemies. Having proclaimed that all who embraced Christianity should destroy their idols, Pigafetta "showed the Queen a small image of the Virgin, with the infant Jesus, with which she was much affected and delighted. She begged it of me to *replace her idols*, and with great willingness I acceded to her request."

In an affray on behalf of the Christian King of Tubu, Magalhaen was killed, and his body preserved by the Indians as a monument of their victory. The ships were then placed under the command of Odoard Barbosa, a Portuguese, and Juan Serero, a Spaniard. The account of the return of this expedition, which first navigated the circumference of the globe, should be told in Pigafetta's own words:—

"Some of our men, especially the sick, were desirous of making the shore at Mozambique, where is a Portuguese establishment, as our vessel was very leaky, the cold we endured extremely severe, and, above all, as we had no other than rice and water to live upon; for all the meat which, for want of salt we had been unable to pickle, had become putrid. But the major part of the crew being still more attached to honour than life, we determined on using every exertion to return to Spain, however great the perils we might have to undergo.

"At length by the help of God, on the sixth of May we doubled this terrible Cape;\* but to effect this we were forced to approach within five leagues of it, as otherwise, from the constancy of west winds, we could never have effected this end.

\* The Cape of Good Hope.



"We afterwards steered north-west for two whole months together (the months of May and June), without any rest, and in this interval lost twenty-one men, including Indians. We made a singular observation on throwing them into the sea; the corpses of the Christians floated with the face towards heaven, but those of the Indians with the face downwards.

"We were now almost wholly destitute of provisions, and had not heaven favoured us with fine weather, we should all have perished with hunger. On the ninth of July, on a Wednesday, we distinguished Cape Verd Islands, and anchored off that called St. Jago. As we knew we were in an inimical country, and expected we might excite suspicion, we had the precaution of enjoining the men in the longboat, whom we sent on shore for provisions, to say that we had touched at this port on account of our foremast being split on crossing the line, which occasioned us to lose so much time, that the Captain-General, with two other vessels, had continued his course to Spain without us. We moreover spoke in such manner as to cause them to imagine we came from the shores of America, and not from the Cape of Good Hope. We obtained credit, and our longboat was twice laden from the shore with rice, in exchange for different merchandize.

"In order that we might discover if our journals had been regularly kept, we inquired on shore what day it was, and was answered Thursday; this occasioned us much surprise, as, according to our journals, it appeared to be Wednesday. We could not be satisfied of having lost a day; and for my part I was still more astonished at the circumstance than the rest, for I had enjoyed so perfect a state of health as to be able, without interruption, to mark the days of the week, and the months. We afterwards found that there was no mistake in our calculation; since, having constantly travelled westward and followed the course of the sun, on our return to where we departed from we ought naturally to have gained twenty-four hours on those who remained on the spot; this, to be convinced of, requires but a moment's reflection. The longboat on its third trip, we perceived was detained, and we had reason to suspect, by the movements of certain caravellas, that a design was meditated against our ship; in consequence, we resolved on immediate flight. We afterwards were informed that it had been stopped on account of one of the sailors having divulged our secret, by relating that the Captain-General was dead, and that our ship was the only one of the squadron which had returned to Europe.

"Thanks to Providence, on Saturday, 6th of September, we entered the bay of San Lucar; and of sixty men, of which our crew consisted on our leaving the Malucho Islands, but eighteen remained, most of whom were sick. The residue had either run away from the ship at the island of Timor, had for different crimes there been punished with death, had died of hunger, or become prisoners to the Portuguese at San Jago.

"From our departure from the bay of San Lucar to the day of our return, we reckoned to have sailed upwards of fourteen thousand six hundred leagues, having circumnavigated the globe from east to west.

"On Monday, 8th September, 1522, we cast anchor near the Mole of Seville, and fired the whole of our artillery. On Tuesday, we repaired in our shirts, barefooted, and carrying a taper in our hands, to the church of our Lady of Victory, and to that of Sta. Maria de Antigua, as we had vowed to do in the hour of danger."

In the year 1525, King Henry VIII. sent out two ships towards the American coasts, one of which was cast away in the Gulf of St. Lawrence, and the other returned home the same year, without any material discovery.

In the reign of Edward VI., about the year 1553, Sir

Hugh Willoughby was sent with three ships to make discoveries in northern parts. He sailed in May, and having spent much time about the northern islands subject to Denmark, where he found no commodity but dried fish and train-oil, he was obliged, about the middle of September, after losing the company of two of his ships, to put into a harbour in Lapland, where they could find no inhabitants. They made an attempt to winter there, but were all frozen to death. However the *Edward*, which was the second ship in this expedition, and commanded by Richard Chancellor, who was chief pilot for the voyage, having lost Sir Hugh Willoughby, made its way for the port of Wardhouse, in Norway, where they had appointed to meet if parted by storms. Chancellor staid there seven days; and finding that none of the company came to join him, proceeded on his voyage, and arrived in the Bay of St. Nicholas, on the coast of Muscovy, where he was well received by the natives, *being the first ship that ever came upon their coast*. Chancellor himself went to the court of Moscow, where he settled a trade between England and Muscovy, with the Czar then reigning. This done, he returned to England with the honour of being the *first discoverer of Russia*.\*

The earliest English voyage to the coast of Africa, of which there is any record, was performed by Mr. Thomas Windham, but no details are preserved. In 1553, Windham, with Anthonio Pinteado, a Portuguese, sailed with three ships from Portsmouth; they traded for gold along the coasts of Guinea, and from thence proceeded to the kingdom of Benin, where both the commanders and most of the men died, through the severity of the climate. One ship only returned, bringing forty men. In 1554, Mr. John Lock undertook a voyage to Guinea, with three ships, and, trading along that coast, brought away a considerable quantity of gold and ivory, but proceeded no further. The following years Mr. William Towerson traded to the coast of Guinea; but the English made little progress along this coast until they commenced their voyages to the East Indies.

In 1558, Anthony Jenkinson sailed for Muscovy with four ships under his command. He left his vessels, and travelled by land to Moscow, where he was graciously entertained by the Czar; obtained a pass, and continued his journey through Muscovy, across the kingdoms of Cassan and Astracan, where, taking boats on the river

\* Locke's "History of Navigation."



Volga, he sailed down into the Caspian Sea, having travelled by land about six hundred leagues, in the Czar's dominions, from Moscow. On the Caspian Sea he spent twenty-seven days; after which he made a five days' journey by land among a wild tribe of Tartars, with a caravan of one thousand camels; then twenty days more through a desert, suffering much from hunger and thirst. This brought him again to another part of the Caspian Sea. Hence he continued his discovery in the Tartar countries, and returned to Moscow with letters from Queen Elizabeth to the Czar, and taking the same way as before, down to the Caspian, crossed over into Hircania; where, being honoured and conducted by the princes of that country, he passed through the court of the King of Persia, at Casbin, obtained several privileges for the English nation, and returned home in safety.\*

Sir Martin Frobisher for fifteen years fruitlessly endeavoured to discover a north-west passage to China. At length he obtained the favour of Dudley, Earl of Warwick, and sailed from Deptford on the 8th June, 1576, Queen Elizabeth witnessing his departure, and waving her hand to bid him farewell. He missed the discovery of Hudson's Straits, but discovered a small strait running parallel therewith, to which he gave his name. Among other products of the lands visited by him, he brought a large black stone, which was found to contain gold. Another expedition was then planned, consisting of a ship of the Royal Navy, and two barges, which sailed from Greenwich on the 31st May, 1577. After discovering some bays and islands, and procuring some golden ore, he returned, and reached England at the end of September. A third expedition, which sailed the 31st May, returned in October. On their second voyage, being outward bound, they called at the Orkney Islands. The people fled from their cottages with shrieks, and ran to alarm their neighbours. Their fear arose from the fact, that they were *often troubled by pirates*. Arrived in Greenland, they sought intercourse with the people, who from fear flew to their canoes. The sailors then took to their boats, and drove the canoes ashore. The following incident is recited in a paper by one of the voyagers in the second expedition:—

“When they were landed, they fiercely assaulted our men, who wounded three of them with our arrows, and perceiving themselves thus hurt, they desperately leaped off the rocks

\* Locke's “History of Navigation.”



into the sea, and drowned themselves, which if they had not done, but had submitted themselves, or if by any means we could have taken them alive (being their enemies as they judged), we would both have saved them, and also have sought remedy to cure their wounds received at our hands. But they, altogether void of humanity, and ignorant what mercy meaneth, in extremities look for no other than death; and, perceiving they should fall into our hands, thus miserably by drowning rather desired death, than otherwise to be saved by us; the rest perceiving their fellows in this distress, fled into the high mountains. Two women, not being so apt to escape as the men were, the one for her age, and the other being encumbered with a young child, we took. The old wretch, whom divers of our sailors supposed to be either a devil or a witch, had her buskins plucked off to see if she were cloven-footed, and for her ugly hue and deformity we let her go. The young woman and the child we brought away. We named the place where they were slain Bloody Point, and the bay or harbour, York's Sound, after the name of one of the captains of the two barks. Having this knowledge both of their fierceness and cruelty, and perceiving that fair means as yet is not able to allure them to familiarity, we disposed ourselves, contrary to our inclination, something to be cruel, returned to their tents and made a spoil of the same; where we found an old shirt, a doublet, a girdle, and also shoes of our men, whom we lost the year before; on nothing else unto them belonging could we set our eyes."

Sir Martin Frobisher, afterwards joined in the expedition of Sir Francis Drake to the West Indies.

A small squadron was fitted out in 1562 by Captain John Hawkins, with which he sailed to the coast of Guinea, and commenced the inhuman traffic in slaves. The following note upon his first expedition is from Hakluyt:—

"He departed from the coast of England in the month of October, 1562, and in his course touched first at Teneriffe, where he received friendly entertainment. From thence he passed to Sierra Leone, upon the coast of Guinea, which place by the people of the country is called Tagarin, where he stayed some good time, and got into his possession, partly by the sword, and partly by other means, to the number of 300 negroes at the least, besides other merchandises which that country yeeldeth. With this praye he sayled over the ocean sea unto the island of Hispaniola, and arrived first at the port of Isabella: and there he had reasonable utterance of his English commodities, as also of some part of his negroes, trusting the Spaniards no further, then that by his owne strength he was able still to master them. From the port of Isabella he went to Puerto de Plata, where he made like sales, standing always upon his guard, from thence also he sailed to Monte Christi, another port on the north side of Hispaniola, and the last place of his touching where he had peaceable traffique, and made vent of the whole number of his negroes, for which he received in those three places by way of exchange such quantitie of merchandise, that hee did not onely lade his owne 3 shippes with hides, ginger, sugars, and some quantities of pearls, but hee freighted also two other hulks with hides, and other like commodities, which hee sent into Spaine. And thus leaving the Island, hee returned and disembarked, passing out by the islands of the Caycos, without further entering into the bay of Mexico, in this his first voyage to the West India. And so with prosperous successe and much gaine to himselfe and the aforesayde adventurers, he came home, and arrived in the moneth of September, 1563."\*

\* Hawkins's Voyages, page 522.

It is remarkable that the principal ship of the expedition which commenced that awful traffic, which will ever remain as a dark spot upon our history, was named the *Jesus*, and of this vessel Hawkins was the captain. In his own account of the second expedition, which sailed in 1564, he frankly says:—"In this island we stayed certaine daies, going every day on shore to take the inhabitants with burning and spoiling their townes." In his account of "The third troublesome voyage made with the *Jesus*, and foure other ships," etc., he says:—

"But even in that present instant, there came to us a negro, sent from a king, oppressed by other kings, his neighbours, desiring our aide, with promise that as many negroes as by these warres might be obtained, as well of his part as of ours, should be at our pleasure: whereupon we concluded to give aide, and sent 120 of our men, which the 15th of Januarie, assaulted a towne of the negroes of our allies adversaries, which had in it 8000 inhabitants, being very strongly impaled and fenced after their manner, but it was so well defended, that our men prevailed not, but lost five men and fortie hurt: so that our men sent forthwith to me for more helpe: whereupon considering that the good successe of this enterprise might highly further the commoditie of our voyage, I went myselfe, and with the help of the king of our side, assaulted the towne, both by land and sea, and very hardly with fire (their houses being covered with dry Palme leaves), obtained the towne, and put the inhabitants to flight, where we tooke 250 persons, men, women, and children, and by our friend the king on our side, there were taken 600 prisoners, whereof we hoped to have our choise: but the negro (in which nation is seldom or never found truth) meant nothing leff: for that night he removed his camp and prisoners, so that we were faine to content us with those few which we had gotten ourselves."

These expeditions were fitted out by companies of unprincipled adventurers, of which several were formed in the sixteenth century, for the purpose of sending armed squadrons to any part of the world to discover and to plunder. Such acts, so far from being condemned by the public voice, and by the government, were highly applauded, and the lawless pirates, after sweeping the seas, and desolating settlements, were received with acclamation. Hawkins, in reward for his achievements, was knighted by Queen Elizabeth, and he adopted as his crest a demi-negro manacled!



ARMS OF SIR JOHN HAWKINS.

The exploits of Hawkins excited the ambition of Captain Drake, whose successes upon the seas, and especially against the Spaniards, form a remarkable passage in our naval history. It is said that Drake was brought up at the expense of Sir John Hawkins, who was his kinsman. This will account for his adventurous spirit, and for the little importance he attached to the rights of any but his own countrymen. About the year 1570, he projected an expedition against the Spaniards in the West Indies, which he no sooner announced, than he found volunteers in sufficient numbers to accompany him. He conducted successive expeditions against the Spanish settlements and shipping, and committed so many outrages that he was complained of by the Spanish Ambassador as a pirate, and made to deliver up some of the plunder he had taken. In 1572, with only two ships, one of seventy the other of twenty-five tons, he stormed the town of Nombres de Dios, on the Isthmus of Darien. He afterwards took Vera Cruz, and obtained great booty by falling in with fifty mules laden with silver, of which his men carried off as much as they could, and buried the rest. In subsequent years he sacked the town of St. Jago, in the Cape de Verd Islands, took the City of Carthagenia, and obliged the inhabitants to ransom it; sacked the port of St. Augustine, and took away about £2000 in money and fourteen brass cannon. Thus the adventurers in his expeditions were rewarded, and their unprincipled thirst for gain gratified.

The following notes, from Hakluyt, of Drake's valiant doings in New Spain, are significantly illustrative of the spirit of his age:—

"Wee kept our course from the Isle of Cano (which lyeth in eight degrees of northerly latitude, and within two leagues of the maine of Nicaragua, where wee calked and trimmed our ship) along the coast of Nuova Espanna, untill we came to the Haven and Towne of Guatulco, which (as we were informed) had but seventeene Spaniards dwelling in it, and wee found it to stand in fiftene degrees and fiftie minutes.

"As soone as wee were entered this Haven we landed, and went presently to the towne; and to the Towne-house, where we found a judge sitting in judgment, he being associate with three other officers, upon three negroes that had conspired the burning of the Towne: both which judges and prisoners we tooke, and brought them a shippeboard, and caused the chiefe judge to write his letter to the Towne, to command all the Townesmen to avoid, that we might safely water there. Which being done, and they departed, wee ransacked the Towne, and in one house we found a pot of the quantitie of a bushell full of royals of plate, which we brought to our ship.

"And here one Thomas Moone, one of our companie, took a Spanish gentleman as he was flying out of the Towne, and searching him, he found a chaine of gold about him, and other jewels, which we tooke, and so let him goe."

It is consolatory to find that even in Drake's time there were



differences of opinion respecting his conduct. The immense amounts of wealth he brought home secured for him the support and apologies of many, who contended that his exploits were not only honourable to himself, but to his country; that it would establish our reputation for maritime skill in foreign nations, and raise an useful spirit of emulation at home; and that, as to the money, our merchants having suffered much from the faithless practises of the Spaniards, there was nothing more just than that the nation should receive the benefit of Drake's reprisals. But there was another party, who alleged that he was no better than a pirate; that, of all others, it least became a trading nation to encourage such practices; that it was not only a direct breach of the late treaties with Spain, but likewise of our old leagues with the house of Burgundy; and that the consequences would be much more fatal than the benefits reaped from it could be advantageous. This difference of opinion continued during the remainder of 1580 and the spring of the succeeding year; but at length the sanction of the Crown was given to Drake's services; for, on April 4th, 1581, her Majesty, going to Deptford, went on board his ship, where, after dinner, she conferred on him the honour of knighthood, and declared her absolute approbation of what he had done. She likewise gave directions for the preservation of his ship, that it might remain a monument of his own and his country's glory.\* A war with Spain soon afterwards occurring, Sir Francis Drake was appointed Vice-Admiral of the Fleet, and his numerous successes form a conspicuous page in naval records.

The part of Drake's history which more especially interests us, is the fact that he was the first Englishman who circumnavigated the globe after Magalhaen. Having seen the waters of the Southern Ocean from the Isthmus of Darien, he felt an ambition to be the first Englishman who should sail on the Pacific. His proposals were well received at Court. The Queen furnished him with means, and his fame quickly drew together a sufficient force. The fleet with which he sailed on this extraordinary undertaking consisted only of five small vessels, and about 164 able men. He sailed from England, December 13th, 1577; on the 25th, fell in with the Coast of Barbary, and on the 29th with Cape Verd. March 13th, he passed the equinoctial; made the coast of Brazil, April 5th, 1578, and entered the River de la Plata, where he lost the company of two of his ships; but meeting them again

\* Chalmers's "Biographical Dictionary."

and taking out their provisions, he turned them adrift. May the 29th he entered the port of St. Julian, where he continued two months, for the sake of laying in provisions. August 20th, he entered the Straits of Magalhaen, and September 25th, passed them, having then only his own ship. November 25th, he came to Machao, which he had appointed for a place of rendezvous in case his ships separated, but Captain Winter, his vice-admiral, having repassed the Straits, had returned to England; thence he continued his voyage along the coast of Chili and Peru, taking all opportunities of seizing Spanish ships, and attacking them on shore, till his crew were sated with plunder, and then coasting North America to the height of  $48^{\circ}$ , he endeavoured, but in vain, to find a passage back into our seas on that side. He landed, however, and called the country New Albion, taking possession of it in the name of Queen Elizabeth, and, having careened his ship, set sail from thence, September 29th, 1579, for the Moluccas. He is supposed to have chosen this passage round, partly to avoid being attacked by the Spaniards at a disadvantage, and partly from the lateness of the season, when dangerous storms and hurricanes were to be apprehended. October 13th, he fell in with certain islands inhabited by the most barbarous people he had met with in his voyage; November 4th, he had sight of the Moluccas, and, coming to Ternate, was extremely well received by the king thereof, who appears, from the most authentic relations of this voyage, to have been a wise and politic prince. December 10th, he made Celebes, where his ship unfortunately ran upon a rock, January 9th following, from which, beyond all expectation, and, in a manner miraculously, they got off, and continued their course. March 16th, he arrived at Java Major, and from thence intended to have directed his course to Malacca, but found himself obliged to alter his purpose, and to return home. On June 15th, he doubled the Cape of Good Hope, having then on board 57 men, and but three casks of water. July 12th, he passed the line, reached the Coast of Guinea the 16th, and there watered. September 11th, he made the Island of Tercera, and, November 3rd, entered the harbour of Plymouth. This voyage round the globe was performed in two years and about ten months.

In 1580, Mr. Arthur Pet and Mr. Charles Jackman sailed in May from Harwich, in two barques, to make discoveries in the north-east beyond Weygats. After various disasters, one of the ships returned; the other was lost, after wintering at a port in Norway. The



English, having found the latter attempt at northern discovery unsuccessful, abandoned the object for many years; when the Dutch followed up the design with much energy.

In 1584, Sir Walter Raleigh obtained from Queen Elizabeth letters patent for discovering unknown provinces, and in the same year despatched two ships, which took possession of a large tract of country, afterwards named Virginia, in honour of Queen Elizabeth. Although the continents of North and South America had long been known, their features and extent were little understood, and no efforts had been made to draw advantages from this great increase of the known world, with the exception of the fisheries on the coasts of Newfoundland, and a limited trade with the West Indies.

The biographical accounts of Sir Walter Raleigh invariably say that he himself sailed for Virginia, and took possession thereof, and also ascribe to him the introduction of tobacco and potatoes. This, however, is certainly erroneous. In Hakluyt's *Voyages*,\* we find an account of the "first voyage made to the coasts of America, with two barks, wherein were Captaines M. *Philip Amadas*, and M. *Arthur Barlowe*, who discovered part of the country now called *Virginia*, anno 1584. Written by one of the said Captaines, and sent to Sir *Walter Raleigh*, Knight, at whose charges and direction the said voyage was made."

The Captain, in commencing the account of the voyage, expresses himself thus, which at once puts an end to any doubt as to Sir Walter Raleigh's presence in the expedition:—

"The 27th day of April, in the yeere of our redemption 1584, we departed the West of England, with two barkes well furnished with men and victuals, having received our last and perfect directions by your letters, confirming the former instructions, commandments delivered by your selfe at our leaving the river of Thames. And I thinke it a matter both unnecessary, for the manifest discoverie of the countrey, sa also for tediousness sake, to remember unto you the diurnall of our course, sayling thither and returning: onely I have presumed to present unto you this briefe discourse, by which you may judge how profitable this land is likely to succede, as well to your selfe (by whose direction and charge, and by whose servantes this our discoverie hath become performed), as also to her Highnesse, and the Commonwealth, in which we hope your wisdom will be satisfied, considering that as much by us hath bene brought to light, as by those smal meanes, and number of men we had, could any way have been expected or hoped for."

\* Vol. iii., p. 246, London, 1600.



Having sailed on the 27th day of April, they "scented" the western shore on the 2nd of July:—

"We found shole water, where we smelt so sweete and so strong a smel, as if we had bene in the midst of some delicate garden abounding with all kinde of odoriferous flowers, by which we were assured that the land could not be farre distant: and keeping good watch, and bearing but slacke saile, the fourth of the same moneth we arrived upon the coast, which we supposed to be a continent."

They landed, and took possession of the same, "in the right of the Queen's most excellent Majestie." The only white people ever seen upon those coasts belonged to a ship that had been wrecked there some five-and-twenty years before, of which they obtained an account from the natives. They brought to England with them two savages.

In the year 1585 Sir Richard Grenville made another voyage on behalf of Sir Walter, sailing from Plymouth on the 9th day of April, 1585; the fleet consisting of seven ships, of large and small tonnage. On the 29th, they fell in with a Spanish frigate, which they captured; the next day they took another, "with good and rich freight, and divers Spaniards of account in her, which afterwards we ransomed for good round summes." A number of persons who went with this expedition remained a whole year in Virginia, for the purpose of testing the nature of the climate, and they communicated to Sir Walter a glowing account of the country, and of the capacity for vessels, of the ports upon its coast.

A third voyage was made in 1586, by a ship despatched for the relief of the settlers, "at the sole charges of Sir Walter Raleigh." The colony had fallen into want, but had begun to grow corn, and other things necessary for their subsistence. Sir Francis Drake, returning from sacking St. Domingo, called at Virginia to see how his countrymen fared. He left them three ships of his fleet, so that if relief came not from England, they might return. Most of the people of the small colony being aboard Sir Francis Drake's ships, were driven to sea by a storm; seeing which, the remainder embarked in some vessels which had not started, and the whole of the colony returned to England.

About fourteen days after this occurrence, Sir Richard Grenville arrived with three ships, and finding nowhere the colony he had previously left, marvelled greatly; and, desiring not to lose possession of the country, left fifteen men. The mention of tobacco occurs in an enumeration of the commodities of Virginia, by one of the colonists:—

"There is an herbe which is sowed apart by itselfe, and is called by the inhabitants *Vppowoc*: in the *West Indies* it hath divers names, according to the severall places and countreys where it groweth and is used: the Spainiards generally call it *Tabacco*. The leaves thereof being dried and brought into powder, they use to take the fume or smoake thereof, by sucking it thorow pipes made of clay, into their stomach and head; from whence it purgeth superfluous fleame and other grosse humours, and openeth all the pores and passages of the body: by which meanes the use thereof not only preserveth the body from obstructions, but also (if any be, so that they have not bene of too long continuance) in short time breaketh them: whereby their bodies are notably preserved in health, and know not many greivous diseases, were withall we in *England* are often times afflicted."

Potatoes find the following mention:—

"*Openark* are a kinde of roots of round forme, some of the bignesse of Walnuts, some farre greater, which are found in moist and marish grounds growing many together one by another in ropes, as though they were fastened with a string. Being boiled or sodden, they are very good meat. *Monardes* calleth these roots, Beads or *Paternostri* of *Santa Helena*."

In the year 1587, Sir Walter Raleigh despatched three ships, with about one hundred and fifty emigrants, to plant and extend the colony. There went in this expedition one John White, who was appointed by Sir Walter to be the Governor, and twelve assistants, to whom a charter of incorporation was given, under the title of "the Governor and Assistants of the City of Raleigh, in Virginia." Sailing from Portsmouth on the 26th of April, they anchored at Cowes, in the Isle of Wight, the same day, and lay there eight days. On the 5th of May they reached Plymouth, and remained there two days. On the 16th of July they fell in with the land of Virginia, which they mistook for an island; they rode there two or three days, and were nearly cast away, on account of their ignorance of the coast. They went on shore in search of the former fifteen, "but found none of them, nor any sign that they had been there, saving onely wee found the bones of one of those fifteene, which the savages had slaine the day before." They went further over land, hoping still to find some traces of the former settlers, but found only their houses standing unhurt, the lower rooms being completely overgrown with melons of various sorts. This colony succeeded in establishing themselves; they were befriended by the two savages, Manteo and Towaze, who were brought to England, and taken back again by the colonists. There were in all ninety-one men, seventeen women, nine boys, and two children born soon after the emigrants reached Virginia. Thus was the great continent of North America first colonized by people of British blood.

In the year 1586, Thomas Cavendish undertook an expedition, which resulted in *the second English circumnavigation of the globe*. His father had died in 1572, leaving to him a large fortune, which he soon squandered. To repair his losses, he resolved to engage in a predatory expedition against the transatlantic dependencies of Spain, which had previously afforded so much booty to Sir Francis Drake. The expedition was mainly fitted out by Cavendish himself, for which purpose he mortgaged the remnant of his estates. His squadron consisted only of three small ships, one of a hundred and twenty tons, and two of sixty and forty tons respectively; and the united crews, officers and men, numbered only 123. The mind of every one of these adventurers was inflamed with ideas of plunder. Cavendish embarked in the largest ship, and sailed from Plymouth on the 21st of July, 1586.

Crossing the Atlantic, after touching for a few days at Sierra Leone, he ran along the continent of South America, as far as the Straits of Magalhaen, into which he sailed on the 6th of January, 1587. It took him thirty-three days to clear the Straits. When he reached the Pacific Ocean (24th of February), he turned northward, and soon came to the scene of action which he had selected as likely to furnish most booty. The men fought and pillaged without control, and suffered considerable loss. They burnt Païta, Acapulco, and other settlements, on or near the coast; they took some Spanish ships, destroyed others, and ravaged the sea-board of Chili, Peru, and New Spain. But the crowning blow of the expedition, and that on which Cavendish counted for wealth and honour, was the capture of the annual galleon, the *St. Anna*, which was laden with valuable merchandise, and contained 122,000 Spanish dollars in specie. This ship was 700 tons burden, and well manned; yet, after lying in ambush for her under Cape Lucas, on the coast of California, the English, whose number, small at first, was reduced by battle and sickness, attacked and boarded her. After this, Cavendish, starting from California, crossed the Pacific to the Ladrone Islands, whence he sailed through the Indian Archipelago and the Straits of Java to the Cape of Good Hope. He then made for England, and reached Plymouth on the 9th of September, 1588, having been absent no more than two years, one month, and nineteen days, the shortest period in which the circumnavigation of the globe had been effected.

Cavendish had the merit of making some geographical corrections;:



he estimated at its proper length the distance from Java to the Cape of Good Hope, which the Portuguese had greatly exaggerated; and accomplished much towards the hydrography of the Straits of Magalhaen. He was also the first to point out to the English the local advantages of St. Helena, which before had been resorted to only by the Portuguese. He touched at that island, which he described as covered with trees.

On his return Elizabeth knighted him; and from the portion of the spoils that fell to his share as capitalist and commander, Sir Thomas Cavendish was said, in the language of the time, to have been "rich enough to purchase a fair earldom." But in three years he was a poor man again, and to better his fortunes, once more turned his eyes to the New World; and on the 26th of August, 1591, sailed from Plymouth, having under his command "three tall ships and two barks," suitably equipped. But henceforth the genius of Cavendish seems to have deserted him. Insubordination, sickness, hunger, desertion, and tempestuous weather conspired to render abortive the plans of the commander, who, after capturing and pillaging the town of Santos, in Brazil, died on his voyage home, heart broken from want, mental anguish, and fatigue.\*

The following passages selected from "The Admirable and Prosperous Voyage of the worshipful Master *Thomas Cavindish*, of *Trimly*, in the countie of *Suffolke*, Esquire, into the South Sea, and from thence round about the circumference of the whole earth. Written by Master *Francis Pretty*, lately of Ely in *Suffolke*, a gentleman employed in the same action," will afford further evidence of the spirit in which such enterprises were carried out. Arrived at Sierra Leone,

"On Monday morning, being the 29th day, our Generall landed with 70 men or hereabout, and went up to their towne, where we burnt 2 or 3 houses, and took what spoile wee would, which was but little, but all the people fled."

They fell in with a barque which had been despatched to warn some of the Spanish settlers of their coming:—

"There were in the sayde barke one Fleming and three Spaniards; and they were all sworne and received the sacrament before they came to sea by three or four friers, that if wee should chance to meete them, they should throw those letters over boord, which (as wee were giving them chase with our pinnesse) before wee could fetch them up, they had accordingly thrown away. Yet our Generall wrought so with them, that they did confesse it: but hee was faine to cause them to bee tormented with their thumbes in a winch,

\* Rose's "Biographical Dictionary."

and to continue them at severall times with extreme paine. Also he made the old Flemming beleieve that hee would hang him; and the rope being about his necke hee was pulled up a little from the hatches, and yet hee would not confesse, chusing rather to die, then hee would be perjured. In the end it was confesed by some of the Spaniards, whereupon wee burnt the barke, and carried the men with us."

They landed at the town of Paita—

"Which was very well builded, and marvellous cleane kept in every streete, with a towne-house or guild-hall in the middest, and had to the number of two hundred houses at the least in it. Wee set it on fire to the ground, and goods to the value of five or sixe thousand pounds; there was also a barke riding in the roade, which wee set on fire, and departed, directing our course to the island of Puna."

They found the Island of Puna almost as large as the Isle of Wight, with fair gardens and orchards, and plenty of herbs. After committing various depredations—

"Wee set fire to the towne, and burnt it to the ground, having in it to the number of three hundred houses; and shortly after made havock of their fieldes, orchards, and gardens, and burnt some great ships which were in building on the stocks."

They landed at a haven called Puerto de Natividad, set the houses on fire, and burnt two ships of 200 tons each. After they had captured the *Great St. Anna*, the General, "of his great mercie and humanitie," spared the lives of the people on board that ship, but turned them ashore, and gave them some provisions. The great amount of plunder derived from this capture had nearly destroyed the future progress of the expedition, for in the division of the booty a mutiny broke out, but it afterwards subsided. The pilot, whom they had kidnapped from the *Great St. Anna*, and pressed into their service, having sent a letter to some of towns to the effect that the English ships had been burning and sacking all the places along the coast, the General ordered him to be hanged. Such were the acts which characterized the Cavendish expedition, and of which he wrote to the Lord Chamberlaine upon his return: "It hath pleased the Almighty to suffer mee to circompass the whole globe of the world. . . . I navigated alongst the coast of Chili, Peru, and Neuea Espanna, where I made great spoiles: I burnt and sunke 19 sailes of ships, small and great. All the villages and townes that ever I landed at I burnt and spoiled." These expeditions, ostensibly directed against the Spaniards, were purely piratical. They had been carried on by Drake before the war broke out, and were one of causes of the attempted invasion in 1588. In

many of the places sacked by Cavendish, there were only a handful of Spaniards among a considerable population.

Three large ships, the *Penelope*, the *Merchant Royal*, and the *Edward Bonaventure*, were fitted out at Plymouth in 1591, under the command of Mr. George Raymond, and sailed on the 10th of April for the coast of Guinea and the East Indies. They departed on the 10th of April, and on the 1st of August came to an anchor in a bay fifteen leagues north of the Cape of Good Hope. Here they continued several days, and traded with the blacks for cattle; when, finding many of their men had died, they sent back the *Royal Merchant* with fifty men, there being too few hands to work the three ships, if they proceeded on their voyage. The *Penelope* and *Bonaventure* proceeded, and doubled the Cape of Good Hope; but coming to Cape Corrientes on the 14th of September, a violent storm parted them, and they never met again; the *Penelope* was never more heard of, but the *Bonaventure* held on the voyage. Passing by Mozambique, they came to the island Conera, where the Moorish people, after much pretence of friendship, killed thirty-two of the men, and stole a boat; which obliged the vessel with all haste to put to sea. After much delay by contrary winds the ship doubled Cape Comori, opposite the Island of Ceylon, in the month of May, 1592. Thence in six days, with a strong wind, she came upon the Island of Gomes Polo, near the northernmost point of the Island of Sumatra; and the winter season coming on, stood over to the Island of Pulo Pinao, lying near the coast of Malacca, and there remained until the end of August, during which time twenty-six of the men died. Then the captain directed his course along the coast of Malacca, and, like his predecessors, indulged in exploits more characteristic of the pirate than the discoverer; having taken some prizes, he sought to return home; but being detained by equinoctial calms, the ship's stores ran short, and they called at the West Indies to get supplies. There, while the captain and some of the crew had gone on shore, leaving a boy and five men on board, the latter cut the cables, and sailed away with the ship.

In the year 1593, Sir Richard Hawkins, son of Sir John Hawkins, undertook another voyage to the South Sea. His published "Observations"\* are interesting, as affording proof of the narrow limits of geographical and nautical knowledge, even on the part of those who

\* "The Observations of Sir Richard Hawkins, Knight, in his Voyage into the South Sea." London, 1622.



enjoyed the greatest advantages of the age. For his expedition he had a ship expressly built: she was "betwixt three and foure hundred tunnes, which was finished in that perfection as could be required. For she was pleasing to the eye, profitable for stowage, good of sayle, and well-conditioned." This ship was to be attended by another of one hundred tons, and a pinnace of sixty tons. The vessel met with a mishap at the outset, the nature of which, with the other instances mentioned by Sir Richard, are indicative of neglects and disasters which were of frequent occurrence:—

"Having taken my unhappy last leave of my father, Sir *John Hawkins*, I tooke my barge, and rowed downe the river, and comming to *Barking*, we might see my ship at an anchor, in the midft of the channell, where ships are not wont to more themselves; this bred in me some alteration. And comming aboard her, one and other began to recant the perill they had past of losse of ship and goods, which was not little; for the winde being at east north-east, when they set sayle, and vered out southerly; it forced them for the doubling of a point to bring their tacke aboard, and looffing up; the winde freshing, sodenly the shipp began to make a little hele; and for that shee was very deepe loaden, and her ports open, the water began to enter in at them; which no bodie having regard unto, thinking themselves safe in the river, it augmented in such maner, as the waight of the water began to prelse downe the side, more then the winde. At length when it was seene, and the shete flowne, shee could hardly be brought upright. But God was pleased that with the diligence and travell of the company, shee was freed of that danger: which may be a gentle warning to all such as take charge of shipping, even before they set sayle, eyther in river or harbour, or other part, to have an eye to their ports, and to see those shut and callked, which may cause danger; for avoyding the many mishaps which dayly chance for the neglect thereof, and beene most lamentable spectacles and examples unto us: experiments in the *Great Harry*, Admirall of England, which was overset and suncke at *Portsmouth*, with her Capitaine, carew, and the most part of his company drowned in a goodly summer's day, with a little flawe of winde; for that her ports were all open, and making a small hele, by them entered their destruction; where if they had beene shut, no wind could have hurt her, especially in that place.

"In the river of *Thames*, Master *Thomas Candish* had a small ship over-set through the same negligence. And one of the Fleete of Syr *Francis Drake*, in *Santo Domingo* Harbour, turned her keele upward likewise, upon the same occasion; with many others, which wee never have knowledge of."

This mischance so disheartened his mariners, that they would not proceed any further except she were lightened. He was accordingly obliged to obtain another ship and transfer to her a part of the cargo. By the time they had reached Cape Blanco, the scurvy had wasted more than half of the men, and it was found necessary to burn one of the ships.

\* "*Hawkins's Voyages*," p. 5, sect. ii.

They met with a Portuguese ship, which they seized, and took out of her a good quantity of meal and sugar. On board this vessel there was a Portuguese knight, together with his wife and daughter. The knight was old, and complained that after many years' service for his king, he was brought to that poor estate, and for the support of his wife, daughter, and himself, he had no other substance but what was on board the ship. This moved their compassion, and they gave him the ship, taking only some of the meal and sugar, and depriving the men of their arms. The feeling of compassion was evidently influenced by the fact that what they had on board was of "no great moment." Then they continued their course for the Straits, the "people much animated with this unlooked-for refreshing, and praised God for his bountie, providence, and grace extended towards us." When off the coast of Brazil, one of the ships, giving them no signal, took advantage of a fair wind to desert the expedition and return to England.

Remarking upon the frequency of such desertions, and referring to several special instances, Sir Richard observes:—"These absentings and escapes are made most times onely to pilfer and steale, as well by taking of some prize when they are alone, and without command, to hinder or order their bad proceedings, as to appropriate that which is in their intrusted ship; casting the fault, if they may be called into account, upon some poore and unknowne Mariners, whom they suffer with a little pillage to absent themselves, the cunninglier to colour their greatest disorders and robberies."

Shortly after this event, they were encouraged by the capture of five ships, one having a good supply of gold on board. In the midst of these plunderings they deprecated the want of honesty on the part of those whom they captured:—

"In this ship we had some good quantitie of gold, which shee had gathered in *Baldrovia*, and the *Conception*, from whence she came. Of this shippe was pilot, and part owner, *Alonso Perezbuena*, whom we kept for our pilot on this coast; till moved with compassion (for that he was a man charged with wife and children) we set him ashore betwixt *Santa* and *Truxillo*. Out of this shippe we had also store of good bacon, and some provision of bread, hennes, and other victuall. And for that shee had brought us so good a portion, and her owner continued with us, the better to animate him to play the honest man (though we trusted him no further than we saw him, for we presently discovered him to be a cunning fellow), and for that his other partner had loft the greatest part of gold, and seemed to be an honest man, as after he proved by his thankfulness, in *Lyma*; we gave them the ship, and the greatest part of her loading freely."

Some difficulties arose respecting the division of the spoil, the

particulars of which show that the robbers entertained a strong distrust of each other:—

“Leaving the coast of *Chili*, and running towards that of *Peru*, my company required the third of the gold we had gotten, which of right belonged unto them; wherein I desired to give them satisfaction of my just intention, but not to divide it till we came home, and so perswaded them with the best reasons I could; alleging the difficultie to divide the barres, and being parted, how easie it was to be robbed of them, and that many would play away their portions, and come home as beggerly as they came out; and that the shares could not be well made before our return to *England*, because every man’s merits could not be discerned nor rewarded till the end of the voyage. In conclusion, it was resolved and agreed, that the things of price, as gold and silver, should be put into chests with three keys, whereof I should have the one, the master another, and the third some other person, whom they should name. This they yeilded unto with great difficultie, and not without reason; for the bad correspondence used by many captains and owners with their companies upon their returne, defrauding them or diminishing their rights, hath hatched many jealousies, and produced many disorders, with the overthrow of all good discipline and government, as experience teacheth; for where the souldier and marriner is unpaide, or defrauded, what service or obedience can be required at his hands?”

No discoveries of any importance resulted from this expedition, and but few observations were made of any moment to navigators. A division of the Spanish armada ultimately fell in with Sir Richard Hawkins’s ships, and after a running fight, which lasted several days, the English flag was struck, but the prisoners were treated with a lenity which they little merited.

In September, 1594, “the worshipfull John Wats, Alderman, worshipfull Paul Banning, Alderman, and others of the city of London, victualled three good ships” for an expedition to the coast of Brazil. The ships were placed under the principal command of Captain James Lancaster, who had previously sailed with a squadron to the East Indies, and committed various depredations in the Islands of Ceylon and Sumatra, but who, returning home, was driven upon an island on the coast of Africa, and deserted by his crew. He escaped in a French vessel, however, and landed at Rye.

The squadron consisted of three ships, one of 240 tons, one of 170 tons, and a third of 60 tons. The crews amounted to 275 men and boys. They had been only a short time at sea when they began their acts of legalized piracy. Their first capture was a Spanish ship of 80 tons, laden with Canary wine, which the chronicler of the voyage quaintly says, “came not unto us before it was welcome.”

Arrived at the port of Pernambuco, and seeing some heavily laden carracks lying therein, Lancaster determined to assault the place, and



hauled his ships up in attacking order. A few particulars of the capture of the town will show the spirit and manner in which these marauding expeditions were conducted:—

“About 12 of the clock the Governor of the towne sent a Portingale aboard the Admirall’s ship, to know what he would have and wherefore he came?”

“He returned him this answer: ‘That he wanted the carrack’s goods; and for them he came, and them he would have, and that he should shortly see.’”

Pernambuco was soon in possession of the assailants, after a feeble resistance on the part of the inhabitants, who fled in every direction. The town consisted of about a hundred houses, and in it were found “great store of merchandizes of all sorts: as Brazil-wood, sugars, calico-cloth, pepper, cinnamon, cloves, maze, nutmegs, with divers other good things, to the comfort of us all.” The Admiral went up and down the town, and insisted that there should be no pillaging, but that all the goods should be collected, and fairly divided.

After they had been in possession of the town for some days, and while they were heaping together the things they had seized, some of the inhabitants showed a disposition to treat with them, which was thus met by the British Admiral:—

“The third day after our comming in, came downe from the higher towne, which might be about four miles off upon a hill, three or foure of the principall gentlemen of the country, and sayd that from the bishop, themselves, and the rest, they would have some conference with our Admirall. This newes being brought to the Admirall, he hung downe his head for a small season; and when he had mazed awhile, he answered, I must go aboard of the Flemings upon busines that importeth me, and, therefore let them stay if they will: and so he went and sat there with the Flemings from nine of the clocke till two at the afternoone. In this space divers messengers went to the Admirall, to come away; for these gentlemen stayd. To whom he gave this answer: Are they not gone yet? And about two of the clocke he came aland, and then they tolde him they were departed. Many of the better sort of our men marvelled, and thought much, because he would not vouchsafe to come, and have conference with such men of account as they seemed to be. But the Admirall made them this answer. Sirs, I have been brought up among this people; I have lived among them as a gentleman, served with them as a souldier, and lived among as a merchant, so that I should have some understanding of their demeanors and nature; and I know when they cannot prevaile with the sword by force, then they deal with their deceivable tongues; for faith and trueth they have none, neither will use any unlesse it be to their owne advantage. And this I give you warning, that if you give them parle, they will betray; and for my part, of all nations in the world, it would greive me most to be overtaken by this nation and the Spainards: and I am glad it was my fortune to pay them with one of their owne fetches, for I warrant you they

understand me better than you think they do. And with this I pray you be satisfied ; I hope it is for all our goods ; *for what shall we gain by parle when (by the help of God) we have gotten already that we came for ? Should we venture that we have gotte with our swords, to see if they can take it from us by words or policy ?* there were no wisdom in so doing. You know what it hath cost us, and how many men lie wounded that be not yet hole of this other night's hurts : and, therefore, from henceforth I give this commission, that if any be taken, he be sent away with this order, although he come as a friend, that if either he or any other approach us from henceforth, he shall be hanged out of hand : and other course then this I will not take with them. Which course was followed ; for, within 3 or 4 dayes after, it was performed by two taken in the night."

In the year 1596 the Earl of Cumberland, afterwards the principal adventurer in the first establishment of the East India Company, fitted out an expedition and put to sea. In the account of his voyage, written by himself, it is plainly manifest that no rights were respected, and that the great motive to action, though sometimes under the pretence of war, was nothing else than robbery upon the high seas. He describes his ship as painted black, which well furthered his device, because "though she were great, yet she showed not afar-off." He was looking out for some rich carracks, and therefore would not pursue some smaller prizes which presented themselves. But when needed, he laid hold of Portuguese, Hamburgh, French, or other craft, as suited his purpose. He reached the Canaries, where he heard of a rich marquis, "worth 100,000*l.* if he could be taken suddenly." He therefore sailed "under a strange and ancient flagge," and landing a party of soldiers, not accompanying them himself, "fearing an ague," to prevent which he remained on board, "took physic, and was let bloud." The soldiers stormed the marquis's castle, but found no marquis, nor aught else, save a few pieces of ordnance, and some wine, with which they debauched themselves, the effects of which rendered the victory too dear.

About the year 1600 a company of Merchant Adventurers was established in London, for the better purpose of "the discoverie for the trade of the East Indies." Among the names of the adventurers are to be found those of George Earl of Cumberland, William Cavendish, Esq., John Wats, Paul Banning, James Lancaster, and others, whose names have been mentioned in connection with previous expeditions, but who now appear to have contemplated the more honourable and profitable design of establishing trade with the East. The capital of the company amounted to £72,000 ; they fitted out four vessels, with four hundred and eighty men, which were entrusted to the



command of Captain James Lancaster. The expedition sailed from the Thames on the 13th of February, 1600. The ships had not got beyond Torbay on the 2nd of April, and it was the 1st of November before they doubled the Cape of Good Hope. That the opening of trade was substantially the object of the expedition, is evident from the fact that about £27,000 in merchandize and Spanish money was shipped for the purpose. The patent granted to them by Queen Elizabeth, after reciting the names of the adventurers, ran thus:—"have of our certain knowledge been petitioners unto us, for our Royal Assent and License to be granted unto them, that they, at their own adventures, costs and charges, as well for the honour of this our Realme of England, as for the increase of our navigation, and advancement of trade of merchandize within our said realmes, and the dominions of the same, might adventure might set, forth one or more voyages, with convenient number of ships and pynnaces, by way of traffique and merchandize to the East Indians," etc.

But, in accordance with the spirit of the times, the expeditionists could not resist the temptation of indulging in privateering whenever an opportunity occurred. This voyage forms so interesting and important an event in the history of British navigation and commerce, that it merits especial consideration, being, in fact, the origin of the East India Company, and of our trade with the Indian Islands and Empire.

They sailed from Torbay on the 2nd of April, for the Canaries, and on the 5th of May they caught sight of one of the islands. On the 7th of May they left the Canaries for the Guinea Coast; and from the 20th of May to the 20th of June, they were becalmed. Meeting with a Portuguese ship, they chased her, made her a prize, and took from her a hundred and forty-six butts of wine, twelve barrels of oil, and a great quantity of provisions.

On the last day of June, about midnight, they crossed the line. Soon afterwards their men began to fall sick of the scurvy, and when they arrived at Soldaria, for the purpose of refreshing, the men were so weak that they could scarcely let go the anchors. Here they made an encampment for the sick men on the shore; obtained fresh meat from the natives, and recovered strength. On the 29th of October, 1601, they again put to sea. On the 7th of December they first saw the Island of St. Mary (Madagascar), and they lay here, again refreshing their crews, until the 23rd of December; on the 25th they ran into the Bay of Antongill. Here they heard of five Holland



vessels that had been there two months before, their crews very sick, so that they had lost from a hundred and fifty to two hundred men.

On the 6th of March, 1602, they again set sail, and met another island in  $10\frac{1}{2}^{\circ}$  south latitude. Here they cruised about for some time, apparently with little knowledge of their course, until, on the 9th of May, they had sight of the Islands of Nicobar. They stayed here ten days. On the 20th of April, they altered their course, and sailed for the Island of Sumatra. The wind, however, proving adverse, they were driven to another island north of Nicobar, where, from frequently striking upon coral reefs, in their way through the Indian Ocean, the ships were all leaky. On the 29th of May, they set sail from Sombrero, and on the 2nd of June had sight of the land of Sumatra. On the 5th of June they came to anchor in the roads of Achen, where they concluded the first treaty of amity and commerce with the king, and received as a present for the queen, "a ring of gold, beautified with a ruby, richly placed in his sete, two vestures woven with gold, enclosed in a red box of tzin."

In the Straits of Malacca, they captured a rich carrack:—

"The third day of October, we being in the Straits of Malacca, laying off and on, the *Hector* espied a sayle, and calling to the rest of the shippes, we all descried her, and being toward night, a pressent direction was given, that we should all spread ourselves a mile and an halfe, one from another, that she might not passe us in the night. The shippe fell with the *Hector*, that first espied her, and pressently she called unto her, and shot off two or three pieces of ordnance; so that the rest of the shippes had intelligence, and drew all about her, and began to attempt her with their great ordnance, and she returned shot again. But when the Admirall's ship came up, he discharged sixe peeeces together out of his prow, and then her maine yard fell downe. After that she shot no more, nor any of our shippes, fearing least some unfortunate shot might light betweene wind and water, and so sinke her (for the Generall was very carefull); so the fight ceased till the morning. At the breake of day, the Captain, with some of the rest, entered their boate, and the *Hector* being next her, called them to come aboard him, and Maister John Middleton, the Captain, being Vice-Admirall, brought the boate and Captain aboard the Generall, to whom they rendered their shippe and goods. The Generall pressently caused all the chiefe men of the Prize to be placed aboard our shippes, and onely placed but foure of our men aboard the Prize, for fear of rifling and pillaging the goods that were within her, and those foure suffered none other to come aboard. And their charge was, if any thing should be missing, to answer the same out of their wages and shares, for when the shippes was unladen, the boatswaine and the marriners of the same shippe did wholly unlade her, and none of ours came within her to doe any labour. Only they received the goods into their boats, and carried them aboard such shippes as the Generall appointed them to doe; so that by this order there was neither rifling, theeving, pillaging, or spoiling, wich otherwise would hardly have beene avoyded in such businesse as this. Within five or sixe daies, we had unladen her of nine hundred

and fiftie packes of Calicoes, and Pintadoes, besides many packets of Merchandize; she had in her much Rice, and other goods, whereof we made small account. Now a storm arising all their men were set aboard, and we left her, riding at an anchor. This shippe came from a place called St. Thomas, that lyeth in the Bay of Bengala, and was going for Malacca. When we intercepted her, she had in her about sixe hundred persons, Men, Women, and Children; her burthen was nine hundred tuns. The Generall would never goe aboard to see her, and his reason was, to take away suspicion, both from the Marriners that were there, and the Merchants that were at London, least they might charge, or suspect him for any dishonest dealing, by helping himselfe thereby. He was very glad of this good hap, and very thankfull to God for it, and as he told me, he was much bound to God, that had eased him of a very heavy care, and that hee could not be thankfull enough to him for this blessing given him. For, saith he, he hath not onely supplied my necessities, to lade these ships I have, but hath given me as much as will lade as many more shippes as I have, if I had them to lade. So that now my care is not for money, but rather, where I shall leave these goods that I have, more then enough, in safety, till the return of the ships out of England."

On the 9th of November, they departed, having sent one of the ships with letters to England. Having stopped at some other islands, they entered the Straits of Sunda, and passed thence into the Roads of Bantam on the 15th of December. They were well received by the officers of the king, who was a child. Here they both sold and purchased goods, the people of Java behaving well in their dealings. They left eight men and three factors here, for the purpose of making acquaintance with the people, for the better management of future trade. On the 20th of February, they set sail for England. On the 5th of June, after serious disasters, they reached St. Helena. The crew being again sick of the scurvy, they were obliged to lie here, and recover themselves. On the 5th of July, they sailed from St. Helena; on the 13th, passed the Ascension; on the 19th, they crossed the Line; on the 29th of August, they passed the Island of St. Mary; and on the 11th day of September, they arrived safely in the Downs.

The adventurers followed up their first expedition by a second, in the year 1604, under the command of Sir Henry Middleton. The squadron consisted of four ships, which sailed on the 2nd of April, and came to anchor in Bantam Roads on the 16th of August. The crews were attacked with scurvy; in one of the ships, out of fifty-three men, only ten survived. Two of these ships were loaded with pepper. They reached the Downs on the 6th of May, 1606, one of the ships being lost.

The Company despatched the third expedition, consisting of three



ships, in the year 1607, under the command of William Keeling. One of the ships parted company; the two others did not arrive at the Island of Sumatra until the following year; having spent much time along the coast of Africa, and in beating against contrary winds. In this voyage a settlement of commerce was agreed upon between the commanders of the expedition on behalf of the Queen of England and a Siamese Ambassador, on account of his imperial master. Some observations were made upon monsoons and currents, which must have been a valuable addition to the existing nautical notes.

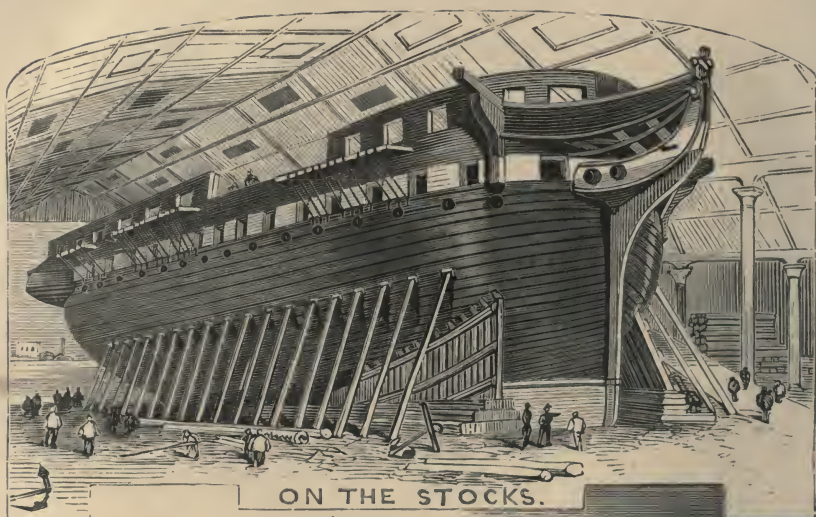
In 1608, the Indian merchants sent out the fourth expedition, there being two ships, the *Union* and the *Ascension*, commanded by Alexander Sharpy and Richard Rowles. The ships sailed on the 14th of March, and having spent above a year by the way, and lost the *Union* in a storm, the *Ascension* came to anchor before the city of Aden, on the coast of Arabia Felix, on the 8th of April, 1609. Thence she sailed into the Red Sea, being *the first English ship that ever entered it*, and on the 10th of June anchored in the roads of the city of Mocha; and having made a short stay to refit, sailed for the coast of Cambaya, where, refusing to take a pilot, the ship was lost on the shoals, but the men saved, and dispersed on their homeward journey. Few of them ever returned to England. The *Union*, which separated from the *Ascension* in a storm, called at the Bay of St. Augustin, in the Island of Madagascar, where the captain and five more, going ashore upon friendly invitation, were killed by the natives, who thought to have surprised the ship with their boats, but were beaten off with great loss. Sailing hence, they directed their course to Achen, on the Island of Sumatra, where they took on board pepper; but, on their homeward voyage, all the men died, except three English and an Indian, who were scarcely alive; and not being able to manage their sails, the ship was carried upon the coast of Brittany, where the French took her into harbour, and most of the lading was saved for company.

In these latter voyages we find little mention of piratical acts, though there is an account given by Captain William Hawkins of a reprisal made upon English ships by the Portuguese, which, as it shows the spirit and the manners which then prevailed between nations, should be told in Captain Hawkins's own words:—

“I met with some tenne or twelve of our men, of the better sort of them, very much frightened, telling me the heaviest newes, as I thought, that ever came unto me, of the taking of the Barkes by a *Portugal* Frigat or two: and all goods and







men taken, onely they escaped. I demanding in what manner they were taken, and whether they did not fight, their answer was No: *M. Marlow* would not suffer them for that the *Portugals* were our friends; and *Bucke*, on the other side, went to the *Portugall* without a pawne, and there he betrayed us, for he never came unto us after. Indeed, *Bucke* went upon the oath and faithful promise of the Captaine, but was never suffered to returne.

"I presently sent a letter unto the Captaine Major, that he release my men and goods, for that we were *Englishmen*, and that our Kings had peace and amity together. And that we were sent unto the *Mogols* country by our King, and with his letter unto the *Mogol*, for his subjects to trade in his country: and with his Majesties Commission for the government of his subjects. And I make no question, but in delivering backe his Majesties subjects and goods, that it would be well taken at his King's hands: if the contrary, it would be a means of breach. At the receipt of my letter, the proud Rascall braved so much, as the Messenger told me, most vily abusing his Majestie, tearing him King of Fishermen, and of an Island of no import, and a fart for his Commission, scorning to send me any answer.

"It was my chance the next day, to meete with a Captaine of one of the *Portugal* Frigats, who came about businesse sent by the Captaine Major. The businesse as I understood, was that the Governour should send me as prisoner unto him, for that we were *Hollanders*. I understanding what he was, tooke occasion to speake with him of the abuses offered the King of *England*, and his subjects: his answer was, that these Seas belonged unto the King of *Portugall*, and none ought to come here without his license. I told him, that the King of *Englands* license was as good as the King of *Spaines*, and as free for his subjects as the King of *Spaines*, and he that saith the contrary, is a traytor, and a villaine, and so tel your great Captaine, that in abusing the King of *England*, he is a base villaine, and a traytor to his King, and that I will maintaine it with my sword, if he dare come on shore. I sending him a challenge, the *Mores* perceiving I was much mooved, caused the *Portugal* to depart. This *Portugal* some two houres after, came to my house, promising me, that he would procure the libertie of my men and goods, so that I would be liberall unto him: I entertained him kindly, and promised him much, but before he departed the Towne, my men and goods were sent for *Goa*."

Notwithstanding the discoveries already recorded, the great ocean, which extends from the tropic of Capricorn to the Antarctic circle, remained unexplored until the commencement of the seventeenth century. The Spaniards had penetrated into the new world of the West, and had extended their possessions and conquests there; the Portuguese had succeeded in accomplishing a passage round "the Cape of Tempests," opening a highway to the islands of the Indian Archipelago, where the representatives of rival nations began to assemble, and dispute the favour of the island chiefs.

A consideration of the small proportion of land yet discovered in the Southern Ocean, inspired many minds with the belief that there were still vast continents to be found. There are, accordingly, historic



traces of various voyages for the purpose of exploring the waters of the South; but the records of them are vague and unsatisfactory.\* It is certain, however, that about the year 1606, Peter Fernando de Quiros, a famous pilot, as navigators were then called, undertook a voyage which resulted either directly or indirectly in the discovery of Australia.

There are extant copies of memorials, addressed by De Quiros to Philip II. of Spain, urging upon his Majesty the further prosecution and settlement of this discovery of what De Quiros styles "the fourth part of the world, *Australia Incognita*." The commencement of his "eighth memorial," which embodies a lengthy description of the country or countries discovered, is sufficiently expressive of De Quiros's earnestness, and practical acquaintance with the subject:—

[TRANSLATION.]

"Sir,—I Captain *Pedro Fernandez de Quiros* say, That with this I have presented to your Majesty eight Memorials, relative to the settlement, which ought to be made in the country which your Majesty commanded to be discovered in *Australia Incognita*, without, to this time, any resolution being taken with me, nor any reply made me, nor hope given to assure me, that I shall be dispatched; having now been fourteen months in this court, and having been fourteen years engaged in this cause, without pay, or any other advantage in view, but the success of it alone; wherewith, and through infinite contradictions, I have gone by land and sea 20,000 leagues, spending all my estate, and incommoding my person, suffering so many and such terrible things, that even to myself they appear incredible; and all this has come to pass, that this work of so much goodness and benevolence should not be abandoned. In whose name, and all for the love of God, I most humbly supplicate your Majesty, that you will be pleased not to permit of so many and such continual labours and watchings, and of so noble and determinate a perseverance, that I should fail to reap those fruits which I so much desire and solicit, being, as it is, so much to the honour and glory of God, and to the service of your Majesty, and productive of innumerable benefits, which shall last as long as the world subsists, and then be eternal.

"The magnitude of these countries newly discovered, is judged of, by what I saw, and by what Captain *Baex (de Torres)* my admiral informed your Majesty on good grounds: its longitude is as much as that of all *Europe, Asia Minor*, and to the *Caspian Sea*, and *Persia*, with all the islands of the *Mediterranean* and *Ocean*, which are in its limit embraced, including *England* and *Ireland*. That unknown part is a quarter of the whole globe, and so capacious, that it may contain in it double the kingdoms and provinces of all those your

\* The names of Hernan Gallego, Juan Fernandez, and Alvaro Mendana de Neyra are associated with the earliest expeditions into the Southern Ocean. De Quiros was pilot in the second expedition of Mendana in 1595. Fernandez sailed from Peru to Chili in 1572, and discovered a small group of islands, which afterwards bore his name. In 1574, quitting Chili, and steering south-west, he fell in with a large island, which is supposed to have been New Zealand. Mendana discovered the islands of Guadalcanal, St. Christopher, and Isabella, in 1568; and in 1595 the islands of Solomon and the Marquesas. He afterwards discovered Santa Cruz.

Majesty is at present lord : and that without adjoining to Turks, or Moors, or others of the nations which are accustomed to disquiet and disturb their neighbours. All the countries seen fall within the torrid zone, and there is part of them which toucheth the equinoctial, whose latitude may, perhaps, be of 90 deg. and others of somewhat less, and if it comes to pass as it promises, there will be countries, which will be antipodes to the better part of *Africa*, and all *Europe*, and the rest of all *Asia Major* (and will not be inferior to them)."

The vast extent of the new country, so particularly pointed out by De Quiros, is unfavourable to the supposition entertained by some authors, that the *Australia* which he discovered was only one of the islands belonging to the Archipelago of the New Hebrides. This opinion is probably founded upon the description which De Quiros gives of the animal and vegetable productions that came under his observation. It must be remembered, however, that he gives a general account of all that he saw, and that he does not distinguish the natural characteristics of particular islands or lands, either large or small. Hence the description given of the whole may be inapplicable to *Australia* as a part.

The manner in which De Quiros obtained information from a native chief respecting the islands which he afterwards visited, is full of interest. His ships lay at anchor, for ten days, in a bay of an island called Tarmaco. Tumay, the chief of that island, befriended them, and supplied their wants. "This person," says De Quiros, "came on board the ship to see me, and in it I examined him in the following manner :—

"First, I showed him his island and the sea, and our ships and people, and pointed to all parts of the horizon, and made other certain signs; and by them asked him, if he had seen ships and men like ours? and to this he replied *no*.

"I asked him, if he knew of other lands, far or near, inhabited or uninhabited? and as soon as he understood me, he named above *sixty* islands, and a large country, which he called *Manicolo*. I wrote down all, having before me the compass to know in what direction each lay, which were found to be from his island to the S.E., S.S.E., W. and N.E.; and to explain which were small, he made small circles, and pointed to the sea with his finger, and made signs that it surrounded the land; and for the larger, he made large circles and the same signs; and for that large country he opened both his arms, without joining them again, showing that it extended without end; and to make known which were the distant or were nearer, he pointed to the sun from E. to W., reclined the head on one hand, shut his eyes, and counted by his fingers the nights which they slept on the way; and by signs shewed which people were Whites, Negroes, Indians, and Mulattoes, and which were mixed, and which were friends and enemies; and that in some islands they eat human flesh, and for this he made signs of biting his arm, shewing clearly that he hated this people; and in this, and by means of other signs, what he said was understood, and it was repeated so often that he seemed to be tired; and pointing with his hand to S.S.E. and other points, gave them fully to understand what other lands they were. He shewed a desire of returning to his house; I

gave him things that he could carry, and he took leave, saluting me on the cheek, with other marks of affection.

"Next day I went to his town, and to be the better confirmed of what *Tumay* declared, I carried with me many Indians to the shore, and having the paper in my hand, and the compass before me, asked all of them many times about the lands of which *Tumay* gave the names; and in every thing all of them agreed, and gave intimation of others inhabited all of people of the colours before mentioned, and also of that *great country*, wherein by proper signs they said that there were cows or buffaloes, and to make it understood that there were dogs they barked, and for cocks and hens they crowed, and for hogs grunted; and thus, in this manner, they told what they wanted, and replied to whatever they were asked; and because they were shewn pearls in the tassel of a rosario, they intimated that they had such. All these questions and inquiries others of my companions made this day and other times of these and other Indians, and they always said the same, from whence it appeared they were people who speak truth."

The ships which formed De Quiros's squadron, being separated by a storm, one of them, commanded by Luis Vas Torres, fell in with the coast of New Guinea, which was previously known. Sailing to the west in 11° south latitude, he observed land to the southward, and found that he had passed through a strait between the coasts of New Guinea and the peninsula of North Australia. This is the Torres Strait, now marked upon our charts.

In 1610, Captain Henry Hudson sailed with a single barque, and a crew of twenty-three men, for the purpose of discovering a north-west passage to the Indies. This was his fourth attempt; his previous voyages having resulted in various disasters, which, nevertheless, failed to deter him from pursuing his cherished design. Sailing north-west, he reached, in 60° latitude, the mouth of the strait now bearing his name. When he reached the bay, he, for some time rejoiced in the belief that he had found the object of his expedition. In this hope he continued to proceed, taking soundings and making various observations; but found, at last, there was no outlet from the vast gulf, save the strait through which he had sailed. The season was then too far advanced for him to return, and he wintered there, suffering extreme privations. In the spring, instead of returning, he again pursued the object of his voyage, and his crew were once more reduced to the point of starvation. The latter, entertaining the suspicion that, in consequence of the shortness of provisions, he intended to desert some of them, seized him and his son, and forcing them into a boat, with seven sick and infirm of their own number, turned them adrift. Thus perished the discoverer of what may be regarded as the most northerly limit of practicable commerce and navigation, which afterwards became, and still remains, the seat of



the chartered Hudson Bay Company, carrying on an extensive trade in oils and furs.

The discovery of Hudson Bay was followed, in 1616, by an expedition fitted out by private adventurers, commanded by Captains Baffin and Bylot. This resulted in the discovery of that large inland sea now known as Baffin's Bay, which they entered through the straits visited by Captain Davis, about 1585. No other navigators venturing into these extremely northern latitudes for more than two hundred years subsequently to Baffin and Bylot, the existence of Baffin's Bay became a matter of doubt, and it was commonly omitted from charts, until confirmed by the expeditions of Captains Ross and Parry.

In the same year, 1616, a geographical discovery of leading interest and importance was made—the passage into the Pacific round Cape Horn, instead of through the dangerous Straits of Magalhaen, which, for more than a century, had been the only channel of communication between the Atlantic and the Pacific Oceans. Varying in breadth, from a mile and a half to forty miles; in its depth, suddenly changing from upwards of 1500 feet to extreme shallows; studded in parts by rocks and islands; subject to heavy tempests and violent currents; the perilous nature of that passage must for ever have operated as a barrier to a frequent communication with the Pacific, but for the discovery of the southern extremity of the lands of the Western Hemisphere.

This discovery was made by Schouten, a native of Horne, in Holland, the object of the expedition being to find a new way to the East Indies without infringing the monopolies set up by the Dutch East India Company, which had obtained a patent, giving them the exclusive right of passage by the Cape of Good Hope, eastward, or through the Straits of Magalhaen, westward. Schouten, who had been three times to the East Indies, projected a new passage, by which he might sail thither without infringing the patent mentioned.

For this purpose, two ships were equipped, the *Horne*, of 110 tons, and the *Unité*, of 360 tons. The *Unité* carried sixty-five men, nineteen "great pieces," twelve slings, with muskets, and other provisions of war; the *Horne* carried twenty-two men, eight pieces, four slings, etc. They sailed on the 14th of June, 1615. On the 13th of July, they saw the Island of Teneriffe; on the 21st of August they saw the high land of Sierra Leone; on the 5th of October, "under four degrees seven and twenty minutes," the *Horne* was struck by a sword-fish, with the existence of which the navigators had evidently no prior acquaintance:—

"The fifth of October, we were under foure degrees seven and twenty minutes; the same day about noone, there was such a noyse in the Bough of our Shippe, that the Master being behind in the Gallerie, thought that one of the men had fallen out of the Fore-ship or from the Boe-sprit into the Sea, but as hee looked out over the fide of the Ship, hee saw the sea all red, as if great store of bloud had been poured into it, whereat he wondered, knowing not what it meant; but afterwards hee found that a great Fish, or a Sea monster having a horne, had therewith stricken against the Ship with most great strent. For when wee were in *Porto Desire*, where wee set the Ship on the Strand to make it cleane, about seven foot under water before in the Ship, wee found a Horne sticking in the Ship, much like for thicknesse and fashon to a common Elephant's tooth, not hollow, but full, very strong hard Bone, which had entred into three Planks of the Ship, that is two thicke planks of greene and one of Oken wood, and so into a Rib, where it turned upward, to our great good fortune; for if it had entred betweene the Ribbes into the Ship, it would happily have made a greater hole, and have brought both Ship and men in danger to be lost. It stucke at least halfe a foote deepe into the Ship, and about halfe a foote without, where with great force it was broken off, by reason whereof the great monster bled so much."

On the 3rd of November they had sight of the Ascension Islands; on the 7th of December they stood off Port Desire; on the 18th the *Horne* was destroyed by fire, on the shore of King's Island, where they had laid her up to clean her and make repairs. On the 29th of December—

"About evening we saw land againe, lying North West and North North West from us, which was the land that lay South from the straits of *Magellan* which reacheth South-ward, all high hilly land, covered over with snow, ending with a sharpe point, which we called *Cape Horne*. It lieth under fiftie seven degrees and fortie eight minutes.

"Then wee had faire weather, and a North wind, with great Billowes out of the West, we held our course West, and found a strong streame that ranne Westward.

"The thirtieth, we still had great Billowes out of the West, with hollow water and a strong streame that went West-ward, which assured us that wee had an open way into the South Sea, then we were under fiftie seven degrees, thirtie foure minutes.

"The one and thirtieth wee had a North wind, and sayled West, and were under fiftie eight degrees: then the wind turning West, and West South-west, somewhat variable, wee passed by *Cape Van Horne*, and could see no more land, and had great billowes out of the West, and verie blew water, which then fully assured us that we had the broad South Sea before us, and no land: the wind was very variable, with great store of haile and raine, which forced us oftentimes to winde to and fro.

"The first of February, wee had cold weather, with a storme out of the South-west, and sayled with our maine sayles, lying North-west, and West North-west. The second, the wind West, wee sayled South-ward, and were under fiftie seven degrees fiftie eight minutes, and found twelve degrees North-ward variation of the Compasse. That day wee saw many great Sea-mewes and other Birds.

"The third, we were under fiftie nine degrees twentie five minutes, with indifferent weather, and a hard West wind, and guessed that we were that day under fifty nine degrees and a halfe but saw no land, nor any signe thereof in the South. The fourth, we were under fifty six degrees fortie three minutes, with variable windes, most Southwest, and wound to and fro as the wind blew, with eleven degrees North-eastward variation of Compasse. The fiftie wee had a strong stream out of the West, with hollow water, whereby we could bear to sayle, but were forced to drive with the winde.

"The twelfth, our men had each of them three cups of wine in signe of joy for our good hap, for then the Straits of Magellan lay East from us."

On the 23rd of October they anchored before the Island of Tacatia, on their homeward voyage. Here their ship and goods were seized on behalf of the Dutch East India Company, though they "showed many reasons to the contrarie." The discoverers of the passage round Cape Horn, thus stripped of everything, were left to find their way to Holland by any chance that offered.

In 1642 Abel Janssen Tasman was employed by the Dutch East India Company, to make discoveries in Australia; the information given by De Quiros and Torres still being regarded as little more than fictions. Tasman sailed from Batavia with two ships, on the 14th of August, the above year. The notes of his voyage exhibit a considerable improvement in nautical observations, and especially in the calculation of latitudes and longitudes, so essential in voyages of discovery.

On the 24th of November, Tasman discovered Van Diemen's Land, which he supposed to be a part of the Australian continent, Bass's Strait being unknown for more than a century afterwards. On the 13th of December he discovered New Zealand, where his crew were attacked by savages, and some of them killed; from which circumstance he called the place which he had entered "Murderers' Bay." He afterwards discovered some smaller islands; and it appears that he circumnavigated the continent of Australia, without being aware of the important bearing which his so doing had upon geographical science. In a second voyage, 1644, Tasman entered and explored the great Gulf of Carpentaria.

The next English voyages of particular interest were performed by Captain Dampier, in the years 1681-1688. His expeditions, like those of his predecessors, were for buccanneering purposes; but he made a great number of interesting observations in geography and natural history, and published a narrative of his voyages in three volumes.

Some time afterwards, a Mr. Funnell, who had sailed with Dampier as steward, published an account of one of the voyages, in which he made certain charges against Dampier, to which the latter replied in a pamphlet, from which we quote a few passages, that throw a strong light upon the "heroic deeds" of these marauders. It would be wearisome to follow the dispute throughout; but Dampier apologizes for himself, and seeks to cast the blame of certain mishaps upon his accusers:—



"I mention only the two actions of the voyage, on which depend the miscarriage of the whole, by the *men's disorder*. The first of which is the French ship that we engaged, that was coming to the Island of Juan Fernandos', to whom we gave chase from 3 in the afternoon, and fetched upon her so fast, that making of her to hull, I found she was an European ship, and not a Spaniard; upon which I was not willing to pursue her any further, but the men being, as they pretended, in a desire of engagement, *right or wrong*, I followed her, and next morning early we came up with her; and when I saw nothing would disengage them from an *insignificant attempt*, I encouraged them all I could. By this time my consort had given her a *Broadside*; so I ranged up her other side, and gave her a *Broadside* likewise. Now, to shew the confusion they were then in, they fir'd upon our Consort\* in his falling astern, and hindered his Help. Notwithstanding this I came up again, and exchanged 3 or 4 *Broadsides* with her, wherein Ten of my men suffered, 9 kill'd and 1 wounded, which Dismay'd my men so much, they actually run down off the *Deck*, and made nothing of it afterwards; so that when I could have boarded her and carried her, the mate, *Cleppington* by name, cry'd, The men are all gone; and *Bellhagb* the master, whose office it was to be always upon *Deck*, was gone also, tho' this Gentleman is now a Valiant Talker, to my Detriment."

In another engagement which followed :—

"Before the beginning of this Action we were to the Windward of her, she standing to the *Westward*, and we Bearing away upon her with a Flown sheet, I then order'd my Officers to keep enough to be sure to Windward of her; instead of this, spite of my Heart, they edg'd away, and were so far from having the Power to Command and Board her, as I intended, that we lost the Opportunity, and were forced to *Leward* the first time; after that I tacked, came about, and had her under my *Lee-Bow*: and then I hop'd to Batter her with my chase guns, she having no stern-chace to Gall us; this I took to be the best way of disabling her, and this way I could have made her yield. Instead of this, to shew the World how ready my Officers were to board her, or perform their Duty, the *Master* and the *Mate* left the *Braces*, and betook them to the Great Guns; so in this confusion, neither they nor the private men (let 'em talk what they will) ever intended Boarding her: For it is an argument against all they can say, there was not a man to be Assistant to any Purpose; No Yards brac'd, not a Rope splic'd or knotted in all the Action. For the very Man at Helm contradicted my Orders, Edg'd her away to *Leward* once more; on which I offer'd to shoot him through the Head. While things were at this pass, the *Boatswain* being at the *Braces*, I ask'd him what they did intend to do? He told me to Board her, *Clap her on a Wind then, said I*. But for want of Wind by this time (they being Drunk and Bewitched) as if all things had concurr'd to our Wrong, *The Ship had neither Way, or wou'd she Keep to*. Now could I have gotten alongside, they were so far from being Desirous to Board her, that the *Master* went about Discouraging of the Men; not only that, but he and another came to me, shewing the Powder Barrels at the Enemy's Yard Arms. About 4 in the Afternoon, when we were a great way to the *Leward*, *Clark* the *Mate*, who by this time was Potent in Liquor, cry'd Board her, Board her!"

A voyage made by Dampier in 1699 was directed to discoveries on the coast of New Holland, of which he gave a more circumstantial account than had previously been obtained. He sounded several parts of the north-west coast, marked the positions of some bays, discovered

\* That is, his own men fired into one of their own ships.

dangerous shoals, and made valuable observations upon the vegetable and animal productions of the country. The inhabitants, however, were so wild that they would not enter into friendly communication with him. He also visited New Guinea, and some of the islands of the Moluccas, of which he gathered similar information.

We have now arrived at the close of the seventeenth century—a period when, to the understanding of man, the world assumed a new form, and its navigable and habitable portions had received enormous accessions. If our globe holds an important place in the great scheme of the universe ; if that importance arises from its being the arena in which the deep problem of man's destiny is to be solved ; if that solution lies in the spread and culmination of civilization ; and if these depend upon the free intercourse of nations, and the unlocking of the earth's riches—how much do we owe to the men who, in little more than a century and a half, doubled the previous vastness of the known world ; braved, in their frail ships, the terrors of seas which for ages had defied the courage and skill of the boldest adventurers of the human race ; encountered disease and famine ; risked and withstood the attacks of savages who knew not the great mission upon which they came ; and pursued their designs in opposition to the sneers of the benighted and incredulous, the mutinous insubordination of the faint-hearted, and the tardy support of those from whom alone encouragement and sympathy could be expected ! Such men were COLUMBUS, MAGALHAEN, DIAZ, QUIROS, TASMAN. Take away their discoveries, and you blot out at once the Western Hemisphere, most of the islands of the Pacific, and the great continent of Australia ; you close the Western and Indian Oceans, give back the islands of the Indian Archipelago to their ancient exclusion, and make the world collapse to those eastern boundaries, where empires had decayed, and were still decaying, and into which the barbarism of the north was beginning to surge like a resistless sea.

Let it be remembered, too, that these discoverers were real workers in the cause of human progress : theirs were no piractical and marauding expeditions ; they went not forth to rob and murder. Armed for protection only, they looked for their reward in the discoveries they might make, and in the substantial glory they should gain for their several states.

Honour to the old Franciscan monk who gained for Columbus a hearing at the court of Spain ; honour to the Queen who stripped her





to the prosecution of further discoveries, or the completion of those that had been commenced. Soon after the accession of George III., the country enjoyed an interval of peace, and his Majesty laudably promoted several expeditions of discovery, the motives to which were expressed in the first article of instruction to Commodore Byron, dated the 17th June, 1764:—

“Whereas nothing can redound more to the honour of the nation, as a maritime power, to the dignity of the Crown of Great Britain, and to the advancement of the trade and navigation thereof, than to make discoveries of countries hitherto unknown; and whereas there is reason to believe that lands and islands of great extent, hitherto unvisited by any European power, may be found in the Atlantic Ocean, between



SOUTHERN DISCOVERIES, COMMENCING WITH DIAZ, AND EXTENDING TO THE TIME OF CAPTAIN COOK.

the Cape of Good Hope and the Magallenic Strait, within the latitudes convenient for navigation, and in climates adapted to the produce of commodities useful in commerce; and whereas his Majesty's islands, called Pepy's Island and the Falkland Islands, lying within the said tract, notwithstanding their having been first discovered by British navigators, have never yet been so sufficiently surveyed as that an accurate judgment may be formed of their coasts and product: his Majesty, taking the premises into consideration, and conceiving no conjuncture so proper for an enterprise of this nature, as a time of profound peace, which his kingdoms at present happily enjoy, has thought fit that it should now be undertaken."

Several expeditions followed each other in quick succession. Commodore Byron sailed on the 21st of June, 1764; Captain Wallis, on the 19th of June, 1766; Captain Cateret, on the 1st of July, 1766; and Captain Cook, on his first voyage, May the 25th, 1768. These expeditions were properly equipped for the sole object of discovery, and their conductors were urgently desired to demean themselves in a friendly manner to the people of all countries.

It is impossible to read the accounts of these voyages without being impressed by the superior powers of observation exhibited by their commanders, and the humanizing tone of feeling displayed by them, contrasting strongly with the examples occurring in a previous century. It is also observable that disasters from the prevalence of scurvy among the crews were far less formidable, because the navigators, knowing where certain previously discovered islands lay, were able at intervals to obtain supplies of scurvy-grass, fresh vegetables, meat, and water. These islands became, as it were, to the South Atlantic and Pacific Oceans, so many places of supply and refreshment, without which, even with the improved ships of the eighteenth century, it would have been impossible to carry on navigation successfully upon those seas.

The incidents attending the first meeting of different races of people—the curiosity and wonder with which they regard each other—the difficulty of mutual explanations, their languages being utterly strange—the quarrels arising out of mutual distrust—and the immediate ascendancy of civilized over uncivilized man, where the numbers of the latter are not overwhelming—the whoop of war, the treaty of peace—the chief pacificator found among the savages in one of their tribe a little more advanced than the rest—and the ultimate perception by the barbarians that to trade is better than to fight—form a chapter of surpassing interest in the narratives of all such expeditions.

Captain Wallis's ship was repeatedly attacked by the natives of Otaheite, and it became necessary to fire some heavy guns at their canoes, by which many of them were destroyed. Still, increasing in numbers and daring, they renewed their attacks day after day, until at length it became imperative to show them the full power of the ship's ordnance. About fifty canoes were shattered to pieces at once. But it was necessary to show the savages that the guns were potent at a long distance, as well as near at hand. They were, therefore, directed to a



point on the shore where other canoes were being launched, and to a hill where a multitude of women had gathered to witness the attack of the canoes. The first shots that fell among them at those long distances filled them with terror; they fled into the country, deserted their homes, and were not seen for some time afterwards. At length negotiations of peace and commerce were concluded in this manner:—

“About ten of the natives came out of the wood with green boughs in their hands, which they stuck up near the water's side, and retired. After a short time they appeared again, and brought with them several hogs, with their legs tied, which they placed near the green boughs, and retired a second time. After this they brought down several more hogs, and some dogs, with their fore-legs tied over their heads, and going again into the woods, brought back several bundles of the cloth which they use for apparel, and which has some resemblance to Indian paper. These they placed upon the beach, and called upon us on board to fetch them away. As we were about the distance of three cables' length, we could not then perfectly discover of what this peace-offering consisted; we guessed at the hogs and the cloth; but seeing the dogs, with their fore-legs appearing over the hinder part of the neck, rise up several times, and run a little way in an erect posture, we took them for some strange unknown animal, and were very impatient to have a nearer view of them. The boat was, therefore, sent on shore with all expedition, and our wonder was soon at an end. Our people found nine good hogs, besides the dogs and the cloth; the hogs were brought off, but the dogs were turned loose, and the cloth left behind. In return for the hogs, our people left upon the shore some hatchets, nails, and other things, making signs to some of the Indians, who were in sight, to take them away with their cloth. Soon after the boat had come on board, the Indians brought down two more hogs, and called to us to fetch them; the boat therefore returned, and fetched off the two hogs, but still left the cloth, though the Indians made signs that we should take it. Our people reported that they had not touched any of the things which they had left upon the beach for them; and somebody suggesting that they would not take our offering because we had not accepted the cloth, I gave orders that it should be fetched away. The event proved that the conjecture was true, for the moment the boat had taken the cloth on board, the Indians came down, and with every possible demonstration of joy, carried away all I had sent them into the wood.

“The next morning I sent the boats on shore, with a guard, to fill some more casks of water, and soon after the people were on shore, the same old man who had come over the river to them on the first day, came again to the further side of it, where he made a long speech, and then crossed the water. When he came up to the waterers, the officer showed him the stones that were piled up like cannon-balls upon the shore, and had been brought thither since our first landing, and some of the bags that had been taken out of the canoes which I had ordered to be destroyed, filled with stones, and endeavoured to make him understand that the Indians had been the aggressors, and that the mischief we had done them was in our own defence. The old man seemed to apprehend his meaning, but not to admit it. He immediately made a speech to the people, pointing to the stones, slings, and bags, with great emotion, and sometimes his looks, gestures, and voice were so furious as to be frightful. His passions, however, subsided by degrees, and the officer, who, to his regret, could not understand one word of all that he had said, endeavoured to convince him, by all the signs he could devise,



that we wished to live in friendship with them, and were disposed to show them every mark of kindness in our power. He then shook hands with him, and embraced him, giving him, at the same time, several such trinkets as he thought would be most acceptable. He contrived also to make the old man understand that we wished to traffic for provisions, that the Indians should not come down in great numbers, and that they should keep on one side of the river, and we on the other. After this the old man went away with great appearance of satisfaction, and before noon a trade was established, which furnished us with hogs, fowls, and fruit in great abundance, so that all the ship's company, whether sick or well, had as much as they could use."\*

Here was a treaty concluded, and a boundary defined, without a written sentence, or an intelligible word, but simply by appealing to mutual interests and necessities of opposite tribes of men. The occurrence took place less than a century ago. Upon this island—nay, probably, the very spot—the huts of natives and the dwellings of Europeans now intermingle. Commerce exists—the exports being pearl-shells, sugar, cocoa-nuts, cocoa-nut oil, and arrow-root; the imports, cloth, cutlery, and other articles of manufacture. In a neighbouring island there are a missionary station, schools, and a printing press established.

In 1767 the Royal Society resolved to send some competent persons to one of the South Sea Islands to observe the transit of Venus over the sun's disk. His Majesty George III. favouring the object, a ship, named the *Endeavour*, built for the coal trade, was commissioned, and the command given to Captain Cook. He sailed on the 30th of July, 1768, accompanied by Sir Joseph Banks, President of the Royal Society, and Dr. Solander. On the 30th of October he arrived at Rio Janeiro, and on the 13th of April, 1769, reached Otaheite, where the transit of Venus was observed in different parts of the island. He stayed there until the 13th of July, after which he went in search of several islands, which he discovered. He then proceeded to New Zealand, and on the 10th of October, 1770, arrived at Batavia with a vessel almost worn out, and the crew much fatigued and very sickly. The repairing of the ship compelled him to continue at this unhealthy place until the 27th of December, in which time many of the company died, and more in the passage to the Cape of Good Hope, which place he reached on the 15th of March, 1771. On the 14th of April he left the Cape, and the 1st of May anchored at St. Helena, from whence he sailed on the 4th, and anchored in the Downs on the 12th of June, after having been absent almost three years, and in that time experienced every danger to which

\* Captain Wallis's Voyage.

a voyage of such length was then incident. From the astronomical, geographical, and scientific observations made during this voyage, it deserves to be classed among the most important and honourable enterprises ever accomplished. It threw new light upon botany and natural history; gave precision to many matters of importance to navigation; and added largely to the store of general knowledge.

Sir Joseph Banks, one of the chief promoters of this expedition, is now universally remembered as an eminent naturalist and philosopher. Although the expedition was promoted by the Government, Sir Joseph contributed largely to it from his private purse; and in order to avail himself of the services of an able coadjutor, engaged Dr. Solander, of the British Museum, to accompany him. Solander was a Swede by birth, and one of the most eminent pupils of Linnæus, whose scientific merits had been his chief recommendation to patronage in this country. Banks engaged also in his suite two artists—one for the purpose of taking views and delineating scenery, the other to draw objects of natural history; he also provided himself with all kinds of philosophical instruments, with the means of preserving such specimens in natural history as he might collect, and other articles likely to be of service in scientific observation. In the company were also Mr. Monkhouse, surgeon, and Mr. Green, astronomer. During their passage to Madeira they discovered many marine animals and productions that had, till then, escaped observation. They called at the Island of Madeira, and visited a convent of nuns, the ladies of which expressed a great curiosity to see “the philosophers” of whom they had heard so much. The ladies thought it an excellent opportunity to inquire when the next thunder-storm would happen? and whether a spring of water could be found within the walls of the convent?—such being their ideas of philosophical qualifications.

At Rio Janeiro the Portuguese governor admitted only a very guarded intercourse with them; some precedents of an unfavourable nature probably being fresh in his memory. He positively refused to let any of the party go up the country for the purpose of gathering plants. And when he was told that the object of the voyage was to make observations upon the transit of Venus, he could form no other conception of what was meant, than that it was “the passing of the North Star through the South Pole.”

Notwithstanding the prohibition rigidly insisted upon by the governor, that none of the party should land, they ventured ashore at

daybreak, and remained, at the peril of their lives, until dusk in the evening. But they went neither to kidnap nor plunder: they regained the ship at night, having with them treasures of great value—a collection of plants and insects.

The first rule laid down for the guidance of the Company, in their intercourse with the people of the lands that might be discovered, was “to endeavour, by every fair means, to cultivate a friendship with the natives, and to treat them with all imaginable humanity.”

Soon after Captain Cook's return from his first voyage, he was appointed to command an expedition to again explore the Southern Hemisphere. It had long been a prevailing idea, that the unexplored part contained another continent, one of the crude arguments by which the hypothesis was supported being, that a vast extent of land was necessary in those latitudes to establish the equilibrium of the earth's weight and proportions. Two ships sailed from Deptford on the 9th of April, 1772: the *Resolution*, under the command of Captain Cook; and the *Adventure*, commanded by Captain Furneaux. They arrived at the Cape of Good Hope on the 30th of October, and departed thence on the 22nd of November, and from that time until the 17th of January, 1773, continued endeavouring to discover the continent, when they were obliged to relinquish the design, the sea being covered with ice from the direction south-east to the south-west. They then proceeded into the South Seas, and made several discoveries of islands, in addition to those which they had visited on the previous voyage, and returned to the Cape of Good Hope on the 21st of March, 1774, and from thence to England on the 14th of July; having, during three years and eighteen days, lost but one man by sickness in Captain Cook's ship (and that one not from a disease incidental to the sea), although he had navigated throughout all the climates from fifty-two degrees north to seventy-one degrees south, with a company of a hundred and eighteen men.

The want of success which attended the search for a southern continent did not discourage another plan being resolved upon, which had frequently occupied attention, and been attempted before. This was the finding a north-west passage, which for many years had been a favourite scheme. Although Captain Cook had contemplated resigning the toils and dangers of new expeditions, he accepted the proposal to once more encounter the difficulties and dangers of a perilous voyage, and sailed in the month of July, 1776. The circumstances of Cook's



death, on the Island of Owhyhee, which happened when homeward bound from this voyage, form a melancholy termination to a life of true heroism and incalculable utility. He was barbarously murdered by the natives while endeavouring to recover a boat which some of them had stolen.

Perhaps no science ever received greater accessions from the labours of a single man than geography has done from those of Captain Cook. In his first voyage to the South Seas he discovered the Society Islands; determined the insularity of New Zealand; discovered the straits which separate the two islands, and are now called by his name; and made a complete survey of the shores. He afterwards explored the eastern coast of New Holland, hitherto unknown, and extending upwards of two thousand miles. In his second expedition he resolved the great problem of a southern continent, having traversed the hemisphere in such a manner as not to leave a possibility of its existence, unless near the Pole, and out of the reach of navigation. During this voyage he discovered New Caledonia, the largest island in the Southern Pacific, except New Zealand; the Island of Georgia, and an unknown coast, which he named Sandwich Land, the Thulé of the Southern Hemisphere; and having twice visited the tropical seas, he settled the situations of the old discoveries, and made several new ones. But the last voyage is distinguished above all the rest by the extent and importance of its discoveries. Besides several smaller islands in the Southern Pacific, he discovered, to the north of the equinoctial line, the group called the Sandwich Islands; which, from their situation and productions, have become of great consequence in the system of European navigation. He afterwards explored what had hitherto remained unknown of the western coast of America, containing an extent of three thousand five hundred miles; ascertained the northern proximity of the great continents of Asia and America; passed the straits between them, and surveyed the coasts on each side, to such a height of northern latitude as to demonstrate the impracticability of a passage in that hemisphere from the Atlantic into the Pacific Ocean, either by an eastern or a western course. In short, he almost completed the hydrography of the habitable globe.

Captain Cook may be said to have completed the work of *maritime* discovery. The names of Phipps, Pickersgill, Clerk, Gore, Perouse, Portlocke, Bligh, Vancouver, Bass, etc., are variously associated with experimental voyages; but, from the time of Cook, such expeditions

were set on foot rather to *explore* than to *discover*; they were designed to make known the resources and capabilities of lands already found. The history of such adventures will, therefore, be set apart for a separate section, and will be found to possess an interest unsurpassed in the annals of progress.

It now only remains to speak of modern attempts at the discovery of a north-west passage. The idea that such a passage existed between the Atlantic and Pacific Oceans, prevailed, as we have seen, from a very early period. After the establishment of the Hudson Bay Company, their fur hunters traversed the distant and inhospitable wilds that lay between the shores of Hudson's Bay and the chain of the Rocky Mountains. Some of the more adventurous among their officers reached, by long overland journeys, the waters of the Frozen Ocean. Among the latter were Samuel Hearne, who, in 1771, traced the course of the Coppermine River towards its outlet; and Alexander Mackenzie, who, eighteen years later, descended the great river which bears his name. But the space between the outlets of these rivers, and beyond them, long remained a blank upon the charts.

In 1818 the British Government fitted out an expedition, consisting of two ships, the *Investigator* and the *Alexander*, with the view of finding the long desired passage. Captain Ross was chief in command, Lieutenant Parry the second. The voyage was unproductive of any practical or theoretical satisfaction. In the following year, Lieutenant Parry renewed the attempt, endeavouring to find a passage by way of Behring's Straits. Lieutenant Parry succeeded in passing through Lancaster Sound, and its continuation, Barrow's Strait, and advanced as far to the westward as the meridian of 113°. He had thus accomplished half the distance between Baffin's Bay and Behring's Straits by a navigation of more than 600 miles, through unknown and ice-encumbered seas. In subsequent voyages he added materially to a knowledge of those northern extremes.

In 1819, Captain Franklin made an overland journey, with the view of co-operating with Captain Parry, whose vessels, it was hoped, might have been enabled to reach the northern shores of the American continent, in the neighbourhood of the coasts towards which it was directed. The sufferings which the whole party underwent were of the most frightful description; but they passed over several thousand miles of country previously unknown, and explored a large extent of coast to the eastward of the Coppermine River.

In 1825, Franklin, accompanied by Richardson and Black, conducted a second overland expedition. On this occasion, the intrepid explorers passed down the stream of the Mackenzie, and thence, dividing into two parties, explored the coasts to the east and west of its outlet in the ocean. The subsequent voyage of Captain Beechey, by way of Behring's Strait, in 1826, and the boat voyages of Dease and Simpson in 1837-8, completed the delineation of the northern shores of America, from the furthest point reached by Franklin to the Icy Cape of Captain Cook.

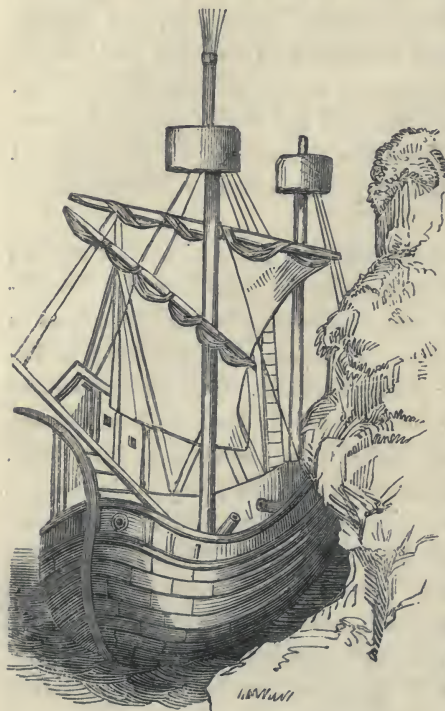
The spirit of polar adventure slumbered for a time, but was not extinguished. There were still believers in the feasibility of a "north-west passage," and gallant men who were willing to peril their lives in the cause of geographical science. Foremost among these was the hero of Arctic adventure, Sir John Franklin. Two well-appointed ships, the *Erebus* and *Terror*, commanded by Sir John Franklin and Captains Fitzjames and Crozier, sailed from Sheerness in May, 1845. They were last seen in the northern part of Baffin's Bay in the August of the same year. They were subsequently ascertained to have passed the winter of 1845-6 near Cape Riley, a point on the eastward of the entrance to Wellington Channel. Their further course and individual fate is unknown. Dr. Rae, in 1854, brought to England undoubted remains of the Franklin expedition, consisting of forks, spoons, etc., which he obtained from a tribe of Esquimaux in the neighbourhood of Buck's River.

The record of numerous expeditions despatched to the northerly regions of America since 1845, pertains rather to the history of the search after Sir John Franklin than to the chronicle of geographical discovery. But to Captain M'Clure (now Sir Robert) belongs the honour of completing the Arctic investigation. Sir Robert M'Clure's expedition sailed from England in January, 1850, and passed through Behring's Strait early in the summer of that year. Ere the brief Arctic summer had passed, M'Clure had reached the shores of Baring Island, wintered on its eastern shore, and the two succeeding winters upon its northern shore. Thence a party of the officers and crew crossed the ice to the southern side of Melville Island, the furthest point of Parry's discoveries. The combined discoveries of Parry and M'Clure prove the continuity of an icy channel between the two great oceans that wash the opposite shores of the New World, and the problem of three centuries and a half is solved.\*

\* Maunder's "Treasury of Geography."



It has been already stated that, for a considerable time after the use of cannon, ships were not provided with port-holes, but that the guns were carried upon deck, and appear to have been elevated to obtain a range over the bulwarks. So long as, from the defective rigging of ships, oars were necessary to their propulsion and steerage, it was impossible to occupy their sides with anything but the platforms upon which the rowers stood. But even after rigging had improved, when two masts were adopted instead of one, and a bowsprit added, by which they could work closer to the wind, and be more independent of the assistance of oars, guns were still carried upon deck, and no port-holes were provided. Subsequently the bulwarks appear to have been *hatched*, portions being made move-



SHIP OF THE FOURTEENTH CENTURY.\*

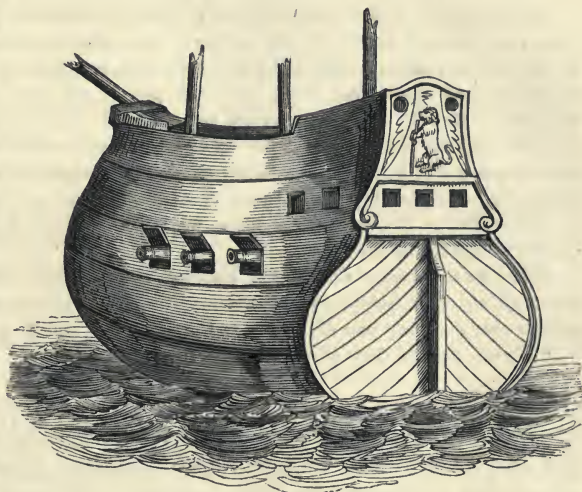
able, to take away or let down, and the guns were run out through the openings thus made.† These openings must have been prejudicial in naval engagements; and in the early part of the sixteenth century, they were abandoned for regular port-holes, which were invented by a French builder at Brest, and afterwards adopted by the English. Some of the holes were round, others square, and they were usually so small as to interfere with the training of the gun. Port-holes were not only adopted in newly-built ships, but old vessels had their sides pierced. However, they could carry only a very small number of guns, their construction being ill adapted for the weight of ordnance, which in heavy seas caused numerous disasters.

\* From Strutt's "Horda;" therein from a Cottonian MS.

† See illustration, p. 287.

That the guns originally introduced were not very effective weapons, is apparent from the fact that the cross-bow and sling remained in use long after the introduction of cannon and hand-guns, and were used in ships simultaneously with the latter.

From several incidents mentioned in the account of Magalhaen's voyage, it may fairly be inferred that the range of the ship's guns was very short, and



ORIGINAL PORT-HOLES.

thus the savages were rather frightened than harmed by their effects.

Cannon appear to have consisted at first of two kinds, a large one for discharging stones, called a bombard, and a smaller sort for discharging darts or quarrels. The following order proves this distinction: in 1377, 1 Richard II., Thomas Norbury was directed to provide from Thomas Restwold, of London, two great and two less engines, called cannons, 600 stone shot for the same, and saltpetre, charcoal, and other ammunition, for stores to be sent to the castle of Bristol.

Soon after the invention of cannon, darts and bolts were shot from them, but before these, stones were used instead. In 1388, a stone ball, which weighed 195 lbs., was discharged from a bombard, called the Trevisan.

These stone balls continued long in use. There is preserved an order of Henry V., 1418, addressed to the clerk of his ordnance, commanding him to arrest artificers in stone for the purpose of making cannon balls:—

[LITERAL TRANSLATION.]

*"The King to his beloved John Louth, Clerk of the Works of our Ordnance, and to John Benet of Madeston, Mason, greeting:*

"Know you that we have assigned to you to arrest and take as many artificers and workmen as will be found necessary for the making of seven thousand stones for the several sorts of guns, and of a sufficient *stuffura* of stone for the same, both from the quarries of Madeston, Hithe, and such other places as you may think proper; and to place and retain the said workmen in the said our Works till the said stones be quite constructed and finished.

"Also to take and to provide as many cars, boats, and vessels with their seamen and workmen, as will be found necessary for the carriage, or transport of the said stones from the places where they are, into our kingdom of Anglia or to places beyond the sea.

"Therefore we command you to attend with diligence to the above, and to do and to execute everything in due form.

"And we command to all and every Viscounts, Majors, Bailifs, Constabularies, Ministers, and to all our other faithfuls and subjects both within and without the Liberties, by these presents that they help and advise you in these things as best as possible.

"Witnes the said *Custos* of Westminster, 10th of Febr., 1418.

"For the Council."

The mention of "*stuffura* of stone" suggests the inference that not only were stone balls employed, but that broken fragments of stone were cemented into balls; and this inference is supported by the terms of another order of the same reign.

A point of great nautical interest, upon which some light can be thrown, though the question involved cannot be definitively settled, is the time of the invention of the modern rudder, of which great doubt has long existed; and no English antiquary has traced it to an earlier date than the middle of the reign of Edward III., or about 1350. It appears, however, that the old plan of steering ships by a paddle on each side was not abandoned until long after the rudder was invented. In a manuscript of probably about the year 1300, two drawings of ships are given, in both of which the rudder appears at the stern, and a man is seen steering with a tiller. In another manuscript of the middle of the fourteenth century, there are two delineations of Noah's ark, represented by ships having a large house on their decks; both of these have rudders at the stern, with two pintles and gudgeons, and a tiller. From the perfect manner in which the rudder appears in these drawings, it is highly probable that though not then, nor until a much later period, in general use, yet that it had long been applied to large vessels, whose height and size out of the water must have rendered it



extremely inconvenient to steer with the ancient paddles. The prejudice which seamen of all ages and all countries have shown against innovations, accounts, however, for the tardy adoption of even the most obvious improvements in nautical science.\*

Sheathing of ships is, according to facts stated in Locke's "History of Navigation," a practice of greater antiquity than might be imagined. Leo Baptisti Alberti, in his book of architecture, has these words: "But Trajan's ship weighed out of the lake of Riccia at this time, while I was compiling this work, where it had lain sunk and neglected for above 1300 years; I observed that the pine and cypress of it had lasted most remarkably. On the outside it was built with double planks, daubed over with Greek pitch, caulked with linen rags; and over all a sheet of lead fastened on with little copper nails." Raphael Volateranus, in his geography, says, this ship was weighed by the order of Cardinal Prospero Colonna. Here we have caulking and sheathing together, above 1600 years ago; for I suppose (says Mr. Locke) no man can doubt that the sheet of lead nailed over the outside with copper nails was sheathing, and that in great perfection; the copper nails being used rather than iron, which, when once rusted in the water with the working of the ship, soon lose their hold and drop out. Another instance is found in Purchas's "Pilgrims," in Captain Saris's voyage to the Court of Japan, about the year 1612, where the captain giving an account of his voyage says:—"That rowing betwixt Firando and Fuccate, about eight or ten leagues on this side Xemina-seque, he found a great town, where there lay in a dock a junck of eight or ten hundred tun burden, sheathed all with iron."

But the sheathing of ships does not appear to have been general prior to the sixteenth century. The longer voyages which had then become common, rendered every improvement in the construction of ships a matter of the utmost importance. The Spaniards appear to have introduced this in those of their ships which sailed to their western colonies, and the English took the example from them. The protection of ships' bottoms was not, however, generally sought by the application of metallic sheathing, but more commonly by planks of wood, within which was placed a thick composition of pitch and other materials.

The mariner's compass has already been mentioned incidentally in

\* Steinitz's "History of the Ship."

connection with Columbus's discovery of America. Before the discovery of the compass, the north star was the mariner's chief guide; and long after the introduction of the compass, it consisted only of a magnetic needle, fixed to a piece of rush or cork, and floated upon water contained in a small vessel. This simple contrivance could only have been used when the sea was perfectly smooth, and by day, or by night when the polar star happened to be obscured.

In all ages, prior to the discovery of the compass, ships were merely coasters. The English, French, Danes, and Dutch have all, within the period of modern history, been powerful at sea. They all in their turns ventured far from home, either to rob, conquer, or trade; but all in the same manner, creeping along the shores, without daring to venture into the breadth of ocean, having no guides out of sight of land but the stars, which in cloudy nights failed them. Indeed, in the winter months, the seas were closed, and navigation stopped.\*

The writer of the article on Magnetism in the "Encyclopædia Britannica," has shown that the loadstone was employed as a nautical guide as early, at least, as the latter part of the eleventh century. And he observes, "that the mariner's compass was known in the twelfth century, about the year 1150, is proved by notices of it in various authors." He then quotes the lines of Guyot de Provins, who, he says, was alive in 1181. These are lines of much interest, a literal translation of which was made for Dr. Larimer's "Concise Essay on Magnetism," and afterwards given by Macpherson:—"This (Polar) star does not move. They (the seamen) have an art which cannot deceive, by virtue of the *manite*, an ill brownish stone to which iron spontaneously adheres. They search for the right point, and when they have touched a needle on it, and fixed it to a bit of straw, they lay it on water, and the straw keeps it afloat. Then the point infallibly turns towards the star; and when the night is dark and gloomy, and neither star nor moon is visible, they set a light beside the needle, and they can be assured that the star is opposite to the point, and thereby the mariner is directed in his course. This is an art which cannot deceive."†

The "dial" and "sailing needle" are occasionally noticed in the records of the reigns of Richard II., Henry IV., and Henry V.; but the entries occur so seldom, compared with other articles of sea stores,

\* Lock's "Essay on Navigation."

† Finchman's "Naval Architecture."

as to justify the suggestion that every vessel might not have been supplied with them, and possibly only the admiral or leading ship of a squadron or fleet.\*

This was the "pernicious discovery"—so pronounced by Mr. Donaldson, secretary to the government of Jamaica, in his letters to the king—which "presented us with new worlds and new ideas! Ploughing the ocean was more thought of than ploughing the fields! The simple herd, whose irresolute spirit dared not visit a church-yard by moonlight, now hardened his mind against the frightful impressions of the tremendous deep."

It is observable that in the accounts of early voyages there is frequent mention of the difficulties of discovering objects at a distance, doubts as to clouds, rocks, or land. The tall mast of a ship was fitted with a circular gallery, in which a mariner was commonly placed to keep a "look out." The telescope had not then been invented; and when invented, it was, like the mariner's compass, denounced as a pernicious discovery, tempting man to pry into the mysterious works of God! To the mariner the telescope, which was invented about the year 1590, became a most useful instrument, enabling him, at a time when charts were notoriously imperfect, to scan the coast, and guard against rocks and breakers, while bearing off at a safe distance from points of danger.

Piracies, not only upon the high seas, but upon the coasts, and even in harbours, prevailed to a serious extent down to the seventeenth century. Some examples have been already afforded in the doings of Hawkins, Drake, Cavendish, etc. But the piracies to which we now allude were committed not only upon the ships of foreign countries, but upon those of our own, by English outlaws. The ships of the Cinque Ports, though in treaty with the King for the protection of the coasts, abused the powers vested in them, and committed atrocities which no Government was powerful enough to restrain.

About the year 1237, Sir William de Marish, a knight who had been accused of murder and treason, took refuge in the Isle of Lundy; and, being joined by many other criminals, he became a formidable pirate. Vessels passing up the Bristol Channel were plundered of their cargoes, especially provisions; and these outlaws

\* Nicolas's "History of the Royal Navy."



landed on the neighbouring shores, where they committed every kind of excess. It was found impracticable to take Marish and his band by force; but he was at length captured by a stratagem, conveyed in chains, with sixteen of his associates, to London, and there hanged.

In 1314, William de Huntingdon stated, in a petition to the King, that he had gone to the port of Dublin with his ship and cargo, and that while he was lying in that port, paying the customs for his said ship, John de Lung, of Bristol, with other malefactors and pirates, captured and carried off his ship, with all the goods and merchandise on board, and afterwards maliciously burnt the vessel.

In 1322, two merchants of Sherborne complained that they had laden a ship of Whitsand with cloth and canvas, and that when it arrived off Portsmouth, Robert de Battayle, and others of the Cinque Ports, boarded the ship, and carried off about eighty pounds' worth of her cargo. About the same time Albrith le Brene, a German merchant, complained to the King that he was with his ship—containing a valuable cargo—lying in the port of Orwell, when two ships, one belonging to Winchelsea, and the other to Greenwich, full of armed men, came into the harbour, boarded his ship, drove him and his nine men on shore, and then pursued them, killing one, and wounded others of the crew, after which they carried off the ship.

About 1314 a ship called the *Blessed Mary*, of Fontarabia, near Bayonne, belonging to the king's subjects, with a cargo worth £2200 sterling, going to Gascony, was driven on shore. The wreck was immediately plundered by sailors belonging to Winchelsea, Rye, and Romney; and when an inquiry was ordered to be made by the Warden of the Cinque Ports at Winchelsea, the people of that town, Rye and Romney, interfered, and by force and violence prevented the investigation from taking place.

About 1324 the ship *Arnot*, of Ditton, laden with fish of various kinds for the king's use, was boarded between Lynn and Oxford, by John Russell, and other malefactors of Spalding, who killed the crew and took the vessel to Seaford, where they sold the ship and cargo.

Wrecking practices prevailed down to a much later period. In 1747 the *Nymphia*, a very rich prize, which had just before been captured from the French, was driven on shore at Beachy Head. A rumour having previously gone abroad of the enormous amount of gold on board this vessel, the news of her being on shore spread like wild-

fire, and multitudes flocked to the shore for plunder. It was found necessary to take a company of soldiers to protect the wreck. Several of the wretched people perished with cold upon the shore, and many more were found nearly dead upon the roads. A woman was found dead, with two children crying over her corpse. The soldiers engaged a party of smugglers who came down to attack the wreck; two of the smugglers were killed, the rest fled.

It is impossible to think of these atrocities, of which only a few examples have been given, without reflecting upon the frequent robberies and murders committed upon the seas, of which no evidence ever came to light. It is impossible to think of the privateering exploits of Sir Francis Drake, and others of his time, without wondering what became of the crews of the captured ships, of whom no mention is subsequently made. Doubtless they were forced to "walk the plank," or were deliberately assassinated. Some of them, we know, were set ashore in lands peopled by savages, where death could only be for a short time deferred. We find it mentioned of Sir Thomas Cavendish that when he captured the *Great St. Anna*, he, "of his great mercie and humanitie," spared the lives of the people on board: the exception may, therefore, be taken to prove the rule. Yet there are not wanting in the present day men who vaunt the heroism of these marauders, and plead for them that they acted in accordance with the spirit of their age.\*

It can scarcely be pleaded that Drake and his contemporaries acted "in the spirit of his age," for there were great dissensions even then about his proceedings. But, long before the reign of Elizabeth, laws had been passed with the view of suppressing such outrageous practices, which destroyed the peace and safety, and crippled the commerce of the kingdom. Impressed with a sense of the cruelty of those

\* The Rev. Charles Kingsley dedicates his recent novel, "Westward Ho!" which is a tale of the Buccaneers, in these words:—"To the Rajah Sir James Brooke, K.C.B., and George Augustus Selwyn, D.D., Bishop of New Zealand, this book is dedicated, by one who (unknown to them) has no other method of expressing his admiration and reverence for their characters. That type of English virtue, at once manful and godly, practical and enthusiastic, prudent and self-sacrificing, which he has tried to depict in these pages, they have exhibited in a form even purer and more heroic than that in which he has dressed it, and than that in which it was exhibited by the worthies whom Elizabeth, without distinction of rank or age, gathered round her in the ever-glorious wars of her great reign." The "even purer and more heroic" can scarcely make the compliment palatable.

piratical proceedings which had long disgraced most maritime countries, and particularly England, Henry V. determined to repress such conduct in his own subjects, without stipulating that other governments should do the same, being satisfied with setting an example of humanity and justice to the nations of Europe—an enlightened policy far in advance of his time. When Parliament met, the Chancellor pointed out the frequent infractions of truces which had been committed on the high sea, in the ports, and on the coasts of the realm, whereby many persons who were protected by truces, and others who had safe conducts, had been killed, or robbed and pillaged, to the great dishonour and scandal of the King, and against his dignity, the which offenders had been encouraged and supported by the people in many counties. It was therefore enacted, that such proceedings should be considered high treason; and that a conservator of the truce should be appointed in each port to inquire into those offences, and to punish the parties; and that if they captured anything, they should bring it into their port, and make a full report to him, before the goods were sold.\*

It is obvious, therefore, that the buccaneers of Elizabeth's reign acted in violation of principles that had long been recognized, and broke through salutary laws which had existed for a century and a half.

It appears that though ships were at times impressed into the King's service, upon other occasions, when a strong naval force was not required, ships belonging to the Crown were lent to merchants, who gave security for their return. One instance will suffice:—In 1232, John Blancoilly had the custody of Henry III.'s great ship, the *Queen*, with all her anchors, cables, and other tackle, to trade wheresoever he pleased, he paying for her use the annual rent of fifty marks. He was bound, at his own expense, to keep the ship in complete repair, against all accidents except perils of the sea, so that the ship might be restored to the King in as good a state as when he received it; and all his lands in England were charged with the fulfilment of the contract.†

The only instances which have been found, down to the commencement of the fourteenth century, of ships having two masts, is in the statement of the monk of St. Denys, that some of the French vessels

\* Nicolas's "History of the Royal Navy."

† Ibid.



in the expedition against England in 1386 had two sails, and in the list of the stores of the King's carrack, about 1410, among which were "one large mast" and "one small mast;" but she seems to have had only "one sailyard of two pieces," and "one tref with two bonnets," which are the only notices of a yard or sail belonging to her.

The illustration, p. 287, is taken from a MS. in the Cotton Library, "done by the hand of John Rouse, the Warwickshire antiquary and historian," who died the 14th of January, 1491. The ship represents the one in which "Erle Richard sailed towards the Holy Land, and specially to the holy city of Jerusalem." This event occurred in the reign of Henry IV., which commenced in 1399, the illustration is, therefore, one of the earliest drawings of a two-masted ship. In the same MS. there are several ships with two masts, and others with four, the additional ones being small, and probably used only for the display of flags, or knightly emblems. The *Great Harry*, built in the reign of Henry VII. (*Plate*, p. 305), carried four regular masts, as did also, the *Harry Grace de Dieu*, built by Henry VIII. In these ships are exhibited in their extreme development the fore and stern castles of these floating fortresses, the cumbersome rig of the old men-of-war with their mast galleries, and fixed top-masts, which caused them to labour heavily in hard weather.

These features were considerably modified and improved in the *Royal Sovereign*, built in 1637. This vessel had three flush decks and a fore-castle, a half-deck, a quarter-deck, and a round-house. Her lower tier had thirty ports, which were furnished with demi-cannon and whole cannon; her middle tier had thirty ports; her third tier twenty-six ports; her fore-castle twelve, and her half-deck fourteen ports. She had thirteen or fourteen ports more, besides a great many loop-holes out of the cabins, for musket-shot. She carried ten pieces of ordnance in her right forward, and ten right aft.

The building of this ship clearly showed that a most important advance had been made in the art, an advance that distinguished the age in which it was made. This ship appears to have been *the first three-decked ship built in England*. Her masting and rigging appear to have been considerably lightened; her topmasts were made to strike; but as yet we see no evidence of the jib, foressail, or mainsail, and the whole rig being square shows that she could not hold close to the wind.

The first thing observable in modern ship-building is the cutting

down of the bulk which our ancestors were fond of piling above the water. The castles, quarter-decks, and poops, with which they delighted to encumber their vessels, began first to give way at the bows; and the forecastle has long been a mere name, having vanished more than a century ago. It was not, however, until a much more recent period, that the mountains of timber piled up astern began to be reduced. The tendency of improved ship-building is to lay the whole expanse of deck as nearly as possible upon the same level; at all



THE ROYAL SOVEREIGN.

events, the modest height of the quarter-decks now constructed contrasts strangely with the old notion of a towering poop, ornamented with cumbrous carvings, and furnished with range over range of quarter-galleries. Beneath the water-mark, the tendency of advancing ship-building has been so to adapt the curve of the swelling side and the concave portions of the ship which "take hold of the water," as to prevent, in a great degree, the heavy and injurious rolling motion, which is increased by the weight a ship, and especially a man-of-war, carries above the water; to cause the ship to sit stiffly, and heel over as



little as possible. To these qualities the naval architect has to add the consideration of speed, and the delicacy of the ship in answering the slightest touch of the helm. The peculiarities of modern improvement in all these respects are easily observable upon comparison of an old-fashioned with a newly-built hull. The bows of modern men-of-war will be found to be sharper and finer than the old style ; and that there



THE COLLINGWOOD SHIP OF WAR.

is more of the concave shape about them—a form which flings the sea sideways and backwards instead of aboard, as the old bluff bows used to do ; that the belly of the ship is by no means so round as it used to be, the sides or walls being far flatter, an improvement which diminishes the tendency to roll ; and that the dimensions of the port of the ship diminish immediately before the rudder, called the run, and in which the convex form changes into a finely modelled concave, so as to allow



the body of water displaced to close quickly and easily, flinging its full force upon the helm.\*

An example of a modern built ship of war, in which these several improvements are combined, is to be found in her Majesty's ship *Collingwood*, the build of which exhibits the following dimensions:—

	Ft.	In.
Length of gun deck . . . . .	190	0
Length of keel for tonnage . . . . .	155	0
Breadth, extreme . . . . .	56	3
Breadth, moulded . . . . .	55	6
Depth in hold . . . . .	23	4
Burthen . . . . .	2609 tons.	

In the lines of modern ships of war, as well as of merchantmen, there is a remarkable approach to the style of building long previously adopted in the construction of yachts—the bows sharper and finer; the runs of great size and delicacy of mould; and the height of the ship attaining its extreme point when measured from the taffrail to the lower extremity of the stern-port. The effect of this latter arrangement, taking into consideration that the ships are made to sit with the stern low in the water, is to cause them to draw many more feet aft than forward, to give them great steering power and a strong, firm hold of the water.

The yacht-like mould is exhibited in the highest degree in ships which are called “clipper” built. These are constructed upon the general theory, that a small amount of stowage room may be advantageously given up to secure a great amount of speed, and with that speed a preference for cargo, and a greater degree of safety from the accidental risks of the sea. No one can dispute that a vessel able to go ten or twelve miles an hour, stability not being sacrificed, must, in the nature of things, be a more secure ship than one which is able to go only five or six. The clippers were, we believe, first built to carry perishable cargoes of salmon from Norway and the north of Scotland to the Thames. They are now commonly used in traffic for the conveyance of easily-spoiled goods, and for that of cattle, which are deteriorated in condition by being long at sea. The general fruit-trade from the Mediterranean, the orange trade from the Azores, as well as the Scotch coasting

\* *Illustrated London News*; article upon the “Models of Naval Architecture, in the Great Exhibition, 1851.”





MERCHANT-MARINE, MAKING FOR PORT.



traffic, are now almost entirely carried on by clippers—craft of as beautiful an appearance on the water as any of Cooper's slaving, or pirate, or privateer schooners, and able to go from the Nore to the Humber in the time which a clumsy Newcastle brig would take to work down the Swin to Harwich.

At first the principles of the clipper build were applied to schooners employed in the coasting trade, or running only short voyages. The clipper schooners—those of Scotland—were formed abaft much upon the ordinary moulding of a yacht, while forward they were upon the principle of the bows of a Clyde steamer, involving great sharpness, rising into a concave shoulder. The effect of this construction, though it does not prevent the vessel pitching, prevents her shipping water by the bows, the overlapping portion of the latter flinging the water downwards and backwards, so that the vessel ships only the amount of wet that is wind-driven from the surface.

More recently the principle of the clipper build has been applied to the largest classes of ships, performing the longest voyages; and the results fall little short of being wonderful. An example of this class of vessel, and their capacity for all that can be desired of them, is afforded by the packet-ship *Marco Polo*. When the tide of emigration from this country first set in towards the gold regions of Australia, it experienced a great check in the length and tedium of the voyage. The ships, which had previously been engaged in the trade to Australia, took from one hundred to one hundred and twenty days on the voyage.

The distinguishing feature of the *Marco Polo* is the peculiarity of her hull. Her lines fore and aft are beautifully fine, her bearings brought well down to the bilge; thus, while she makes amidships a displacement that prevents unnecessary "careening," she has an entrance as sharp as a steam-boat's, and a run as clear as can be conceived. Below the draught-line her bows are hollow, but aloft she swells out handsomely, which gives ample space on the top-gallant deck; in fact, with the bottom of a yacht, she has aloft all the appearance of a frigate. She is a three-decker, and being adopted as a type of a new class of vessels that are now extensively employed in conveying passengers to the British colonies, where those young nations are springing up which in future years will change the political geography of the world, a somewhat minute description of her may be read with interest.

The length of the *Marco Polo* from stem to stern (inside measurement) is 185 feet; but over all she makes considerably more. Her beam is 38 feet, and her depth of hold from the "coombings" 30 feet. Her register tonnage is 1625, but her burthen considerably exceeds



THE MARCO POLO.

2000 tons. On deck, forward of the poop, which is used as the ladies' cabin, is a "home on deck," used as a dining saloon; it is ceiled with maple, and the pilasters are pannelled with richly-ornamented and silvered glass; coins of various countries being a novel feature of the decorations. Between each pilaster is a circular aperture, about six feet in circumference, for light and ventilation; over it is placed a sheet of plate-glass, with a cleverly-painted picturesque view in the centre, with a framework of foliage and scroll, in opaque colours and gold.

The whole panels are brought out slightly by a rim of perforated zinc, so that not only does the light from the ventilator diffuse itself over the whole, but air is freely admitted. The saloon doors are pannelled with stained glass, bearing figures of Commerce and Industry. In the centre of the saloon is a table or dumb-waiter, made of thick



plate-glass, which has the advantage of giving light to the dormitories on the deck below. The upholstery is in embossed crimson velvet. The berths in separate state rooms are ranged in the 'tween decks, and are rendered cheerful by circular glass hatch-lights, of novel and effective construction.

Her height between decks is eight feet, and no pains have been spared in her construction to secure thorough ventilation. In



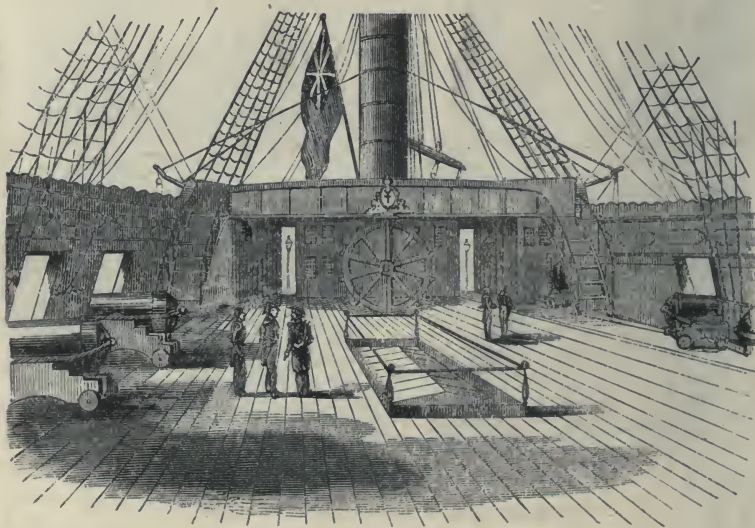
HOLD OF A MODERN MERCHANT SHIP.

strength she could not be well excelled; her timbering is enormous; her deck beams are huge barks of pitch pine; her timbers are well formed and ponderous. The stem and stern frame are of the choicest material. The hanging and lodging knees are all natural crooks, and are fitted to the greatest nicety. The exterior planking and ceiling is narrow; and while there has been no lack of timber, there has been a profusion of labour.



The *Marco Polo* sailed from Liverpool on the 4th of July, 1852, for Port Philip, and made the voyage out in the unprecedentedly short space of *sixty-eight days*, and the passage home in *seventy-four days*. Including twenty-eight days spent in unloading and loading at Port Philip, only five months and twenty-one days elapsed between her leaving and regaining the shores of Britain. Here was at once a gain upon the rates of the old voyages of more than *two months*—a matter of enormous importance to the interests of commerce and of passenger conveyance. On the 10th of August the *Marco Polo* was in lat. 32° north, bound for Port Philip, by the Cape of Good Hope; and on the 11th of November she was again in lat. 32° north, on her return by Cape Horn, having thus sailed round the world in *ninety-four days*.

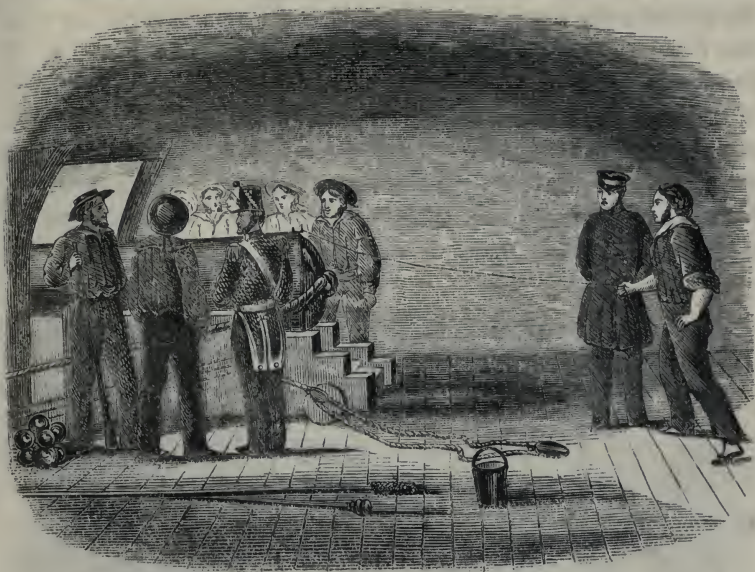
The improved construction of ships, their increased dimensions, better ventilation, and shorter voyages, produce the most important effects upon



QUARTER-DECK AND POOP.

the health of crews and passengers. Notwithstanding the cumbrous appearance of ships has entirely given way to the more graceful and sea-worthy form, the dimensions of all the ships' departments have increased, and they are now no less floating fortresses than formerly, while their internal economy provides many facilities and comforts which were formerly unknown.

The quarter-deck and poop of the *Collingwood* is the subject of



WORKING A GUN.

the illustration p. 372 It presents all the appearance of a battery,



WARD-ROOM, OR OFFICERS' CABIN.



affording a great promenade sheltered by high bulwarks: while upon the gun-deck the scope is ample for efficient action, and greater than was found to exist in some of the stone batteries of Sebastopol. A 34-pounder is generally worked by thirteen men and a boy, consisting of two gun-captains, first and second; two fire-men, two sail trimmers, two pumpers, two boarders, or small armed-men, two spongers, and a boy to carry powder. On the event of any exigency, each gun contributes its quota of two men, who are headed by an officer selected for that purpose. For instance, when the roll of the drum summons the



MESS TABLE.

boarders, two men quit each gun and form a boarding force, under the command of proper officers.

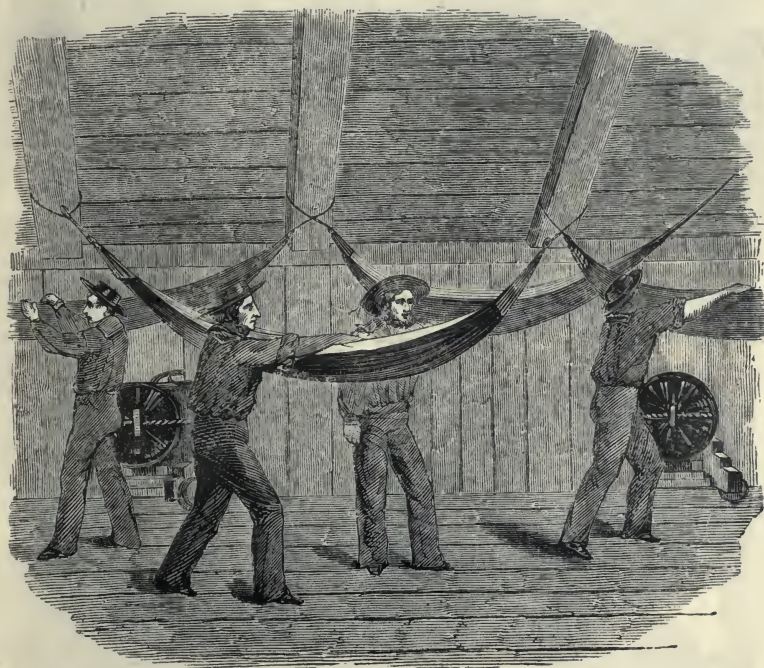
The ward-room is the dining-room and drawing-room of the officers, and is in the after-part of the main-deck. Here are located the commodore, lieutenants, masters, marine officers, surgeons, purser, and chaplain. It is fitted with dormitories or cabins on each side, and these are furnished by their occupants with considerable taste.

Between each two guns on the lower deck is a table about twelve feet long, and three feet or more wide, known as the men's table. It is generally fixed by a moveable pin in a hinge to the side of the ship,



and suspended from the deck overhead by slings or ropes at the outer end, so as to be capable of removal in an instant, when the ship has to be cleared for action. A mess is generally composed of eight, and sometimes twelve men; and there are generally located between each two guns thirty men. They have stools or forms to sit on, the legs of which can be taken out for the better convenience of stowing away.

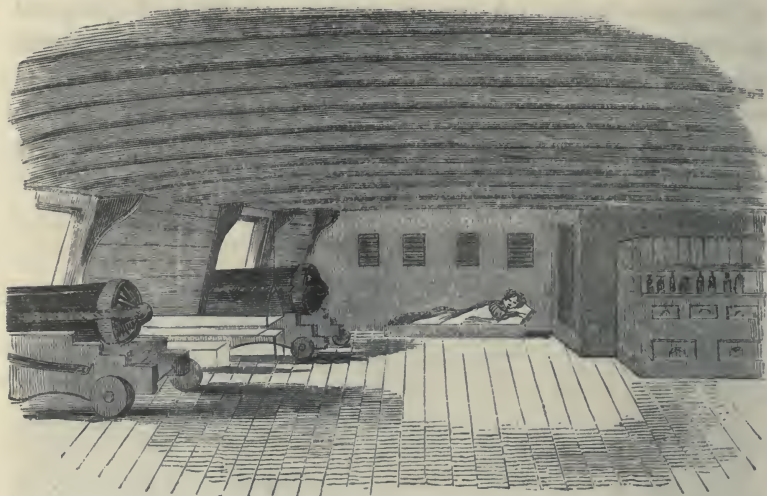
The beds of the sailors are made in hammocks, hung from the beams on the gun-deck, which is much healthier than sleeping in close berths.



LASHING THE HAMMOCKS.

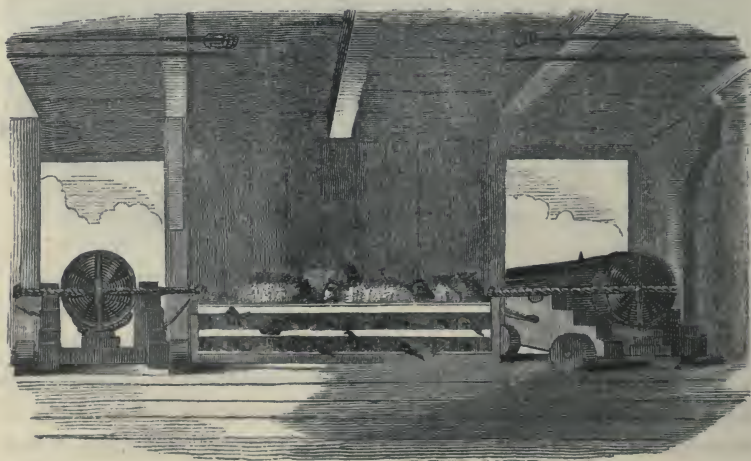
A part of the ship, generally on the starboard or right-hand forward, is set apart for a sick-ward, or hospital, when any of the crew are ill or wounded. This part is kept exceedingly clean and quiet, and is placed under the sole charge of the surgeon and his assistants. It is not interfered with in any way, save for the purpose of cleaning in the morning, which is superintended by the mate of the main deck, and the department is also under the superior inspection of the captain.

Between the fore and main hatchways, on the main-deck, there is a regular fixed sheep-pen of two tiers, each about four feet high, and



THE HOSPITAL.

capable of holding eighteen or twenty sheep each. There are also extra pens between such guns on the main-deck as are not likely to be



SHEEP-PENS AND POULTRY-COOPS.

used, except upon extraordinary occasions. The live stock consists of sheep, goats, and poultry. The goats supply milk, and thus fresh



meat, eggs, and milk are obtained upon the voyage. When a ship has been six weeks at sea, it is usual to serve out to the crew an allowance of lime-juice, an excellent specific against scurvy.

The method of weighing anchor by the capstan is one of the improvements which Sir Walter Raleigh wrote of, as belonging to his time. But for this improvement it would have been almost impossible to raise the heavy anchors now required for vessels of great dimensions.



WEIGHING ANCHOR BY THE CAPSTAN.

In no department has the progress of Great Britain been more marked than that of her shipping, and her increasing communication with every part of the world. As we have seen, within comparatively a modern date, a ship of one thousand tons burden was regarded as a prodigy; now, ships of two thousand tons are regarded as little more than of medium size; and those of two thousand three hundred, and two thousand five hundred tons, and upwards, are every day becoming more common.

In 1701 there belonged to English ports (chiefly London, Bristol, and Yarmouth) 3281 vessels, estimated to measure 261,222 tons, and carrying 27,196 men. The shipping is supposed to have been *doubled* between 1701 and 1760; after which its increase became quite extraordinary. In 1800, it amounted in England to 1,466,632 tons; Scotland, 161,511; Ireland, 54,262; Channel Islands, 16,110; and Colonies, 157,364; total, 1,855,879 tons; employing 138,721 men. In 1831, the registered tonnage of 24,242 British ships amounted to 2,581,964 tons; in 1841, 30,052 ships registered 3,512,480 tons; in



1851, 34,244 ships registered 4,332,085 tons. The recent statistics of shipping are so mixed up with the results of the introduction of steam-navigation, that we must defer, until treating of that subject, a few tabular statements illustrative of the wonderful progress of Britain upon the seas.

Not only have improvements extended to the larger shipping, the "wooden walls" of our island, but the smaller coasting craft have



FISHING SMACKS.

participated in the general advance. The thousands of fishing-smacks that daily leave our havens, are no longer the tub-like boats of old, but of the true clipper cut, making rapid runs to their fishing-grounds, and returning thence with their valuable cargoes for the markets with a speed and regularity which our boating fathers would have been amazed at. The same degree of improvement may be observed in the craft of our pilot service, a most important department of mercantile marine. Ships returning from foreign ports,

with valuable freights, require the earliest and safest conduct to their anchorage.

For communication with such ships, craft of small tonnage, capable of facing all weathers, are required, and these are to be found in all our principal ports—fast sailing, staunch, and managed by skilful hands.

As if the march of improvement must nowhere halt, the yacht



PILOT BOAT.

mould, which has gradually been encroached upon by the mercantile marine, has assumed even fairer lines; so that it is impossible to conceive forms more beautiful than are now displayed by the pleasure-craft that glide about our shores. Nor is sea-worthiness sacrificed to mere ideas of beauty; some of these vessels have performed voyages and encountered weathers which at the first contemplation would appear impossible. The amount of canvas borne in a moderate breeze by some of our racing craft assumes almost fabulous proportions, and



presents a fairy-like appearance, which suggests that every act of toil has a poetical phase, and that by the hard hand of the shipwright there is wrought a form whose lines are true to the principles of beauty—a kind of Nautilus amid the productions of human skill.

The substitution of iron for timber is a subject of great national magnitude: but this will also come more appropriately in the Section upon Steam-navigation. We may, however, here remark that the



YACHT SCHOONER.

invention of iron shipping has been justly regarded as establishing the supremacy of Great Britain as a maritime power for many ages to come. It is not at all improbable that but for this adaptation, the rapid growth of our marine must sooner or later have sustained a check. An oak, in good soil and situation, will in seventy-five years from the acorn contain a ton of timber. The same oak, at one hundred and fifty years of age will contain about eight tons of timber, or twelve loads of square timber. To build a 74-gun ship requires about 2000 tons,



which, at the rate of a load and a-half to a ton, would give 3000 loads of timber, and would, consequently, require 2000 trees of seventy-five years' growth, or 250 of one hundred and fifty years' growth. It has also been calculated that, as not more than forty oaks can stand upon an acre, fifty acres are required to produce the oaks necessary for every 74-gun ship.

We have, however, within our immediate reach, ample stores of



RACING SLOOP.

iron, which afford our builders the means of competing with those new countries whose supplies of cheap timber, it was feared, would afford them an advantage over us. But the extent of the benefit conferred, was not at first sufficiently appreciated. The iron ship-builder is comparatively independent of locality in carrying on his trade. Wherever water can be found to float a ship, when completed, the

builder who adopts iron as his material may erect his stocks and work-shops, free from the trammels of the builder in wood, who is bound inexorably to the dear accommodation afforded in our sea-ports—inasmuch as there alone he can have a sufficient stock of timber to select from. A fine example of an iron-built ship is the *Tayleur*, an Australian clipper, launched in 1853, from the building yard of the Bank-quay Company, at Warrington, an inland place on the river Mersey, distant by water about twenty miles from the port of Liverpool. The *Tayleur*



IRON CLIPPER SHIP TAYLEUR.

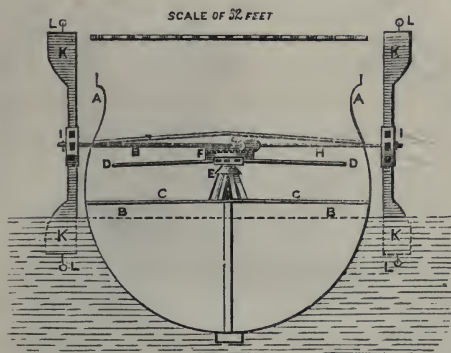
is one of the largest sailing merchant-men ever built in this country. She is 2100 tons new measurement, and carries 4000 tons of cargo on a draught of twenty-one feet. Her dimensions are: Length of keel, 210 feet; rake forward, 15 feet 4 inches; stern-port rake, 5 feet; over all, with counter, 250 feet; breadth of beam, 40 feet.

Although built as a three-decker, having a spar deck, the *Tayleur* is only intended to carry passengers on one—the main-deck; and even on this she is only fitted up for about three-fourths of the number which

she is capable of carrying, the remaining space being liberally given up by her owners to increase the accommodation afforded. That this is unusually great, is at once obvious, from the fact that her beam (forty feet) is ten feet wider than that of the ordinary class of vessels engaged in the trade ; thus allowing an increased space along the middle of the deck, between the rows of berths. She is also very lofty, and her ventilation is perfect. A shaft through her fore-top-gallant-deck, and four port-holes in her stern afford a constant current of air through the ship ; and she has besides seven covered hatchways, with windows to open and close ; and side-lights, about eight feet apart, along her whole length, and opening into every berth. She is divided into five compartments, to accommodate different classes of passengers—the fittings and arrangements in each of which are of a very superior description.

Prior to the introduction of steam, the great difficulty of navigation consisted in the liability of ships to fall into calms, and thus to remain motionless while their cargoes perished and their crews sickened. Even with sailing vessels this difficulty is now greatly obviated, because of the perfected hydrology of the earth, and the accumulated knowledge of the geographical distribution of currents of water and of air.

To remedy the difficulty, it was proposed by Mr. Thomas Savery,



about the year 1698, to navigate ships in calms by an engine which should turn side paddles. The handles, D D, were to be worked by men, after the manner of the capstan; the motion thus obtained was to be communicated to the shaft, H H, by a rack-wheel, and the propulsion to be effected by paddle-blades forming a

wheel. The proposition, with all its crudity, was gravely submitted to the Admiralty, and tried experimentally upon the Thames. A similar plan was proposed in France in the year 1753, and received the reward of the Royal Academy of Sciences, as the most advantageous manner of supplying the action of the wind upon large ships. But this



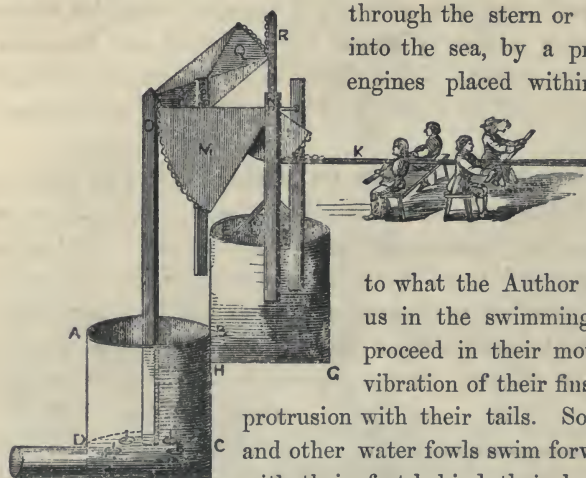
was ten years after Jonathan Hull's patent for paddle-wheels worked by steam had been taken out in England.

In 1730 a patent was taken out by Dr. John Allen, for an invention to navigate a ship in a calm. This was by ejecting water from tubes placed at the ship's stern, by machinery represented in the engraving. "The method I propose," said the inventor, "is very different from anything that has ever yet been attempted, no part of its machinery or apparatus being without the ship. In short, the principle of giving motion to the ship, in my way, is by forcing water or some other fluid

through the stern or hinder part of it into the sea, by a proper engine or engines placed within the ship for that purpose.

This is an operation consensual to nature, agreeable

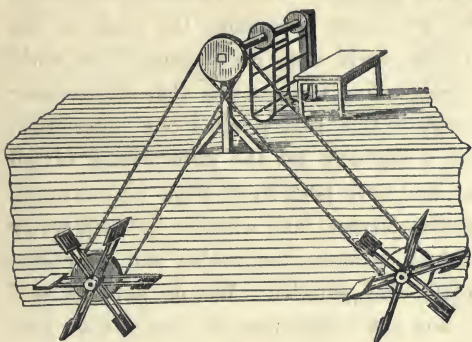
to what the Author of it has shown us in the swimming of fishes, who proceed in their motion, not by any vibration of their fins, as oars, but by protrusion with their tails. So, likewise, ducks and other water fowls swim forward by paddling with their feet behind their bodies. Nor is it



dissonant to some productions of art; witness the sky-rocket ascending in the air by virtue of a stream of fired gunpowder forcibly bursting out at the lower end of it, and the recoiling of a cannon when it is fired off." This proposal was also tried experimentally, and strenuously advocated by its inventor, who further suggested that "the engine for raising water by fire"—the original steam-engine—might be employed to work his machinery. Now, as this proposal was made in 1730, it appears that the first idea of steam navigation, attributed to Jonathan Hull, belongs to Dr. Allen, whose claims we shall more fully enlarge upon when entering upon the history of steam navigation.

Another plan, proposed by Mathon de la Cour, in the year 1753, shows how the inventive spirit of the age was converging to that point which afterwards became of such immense importance in our naval history. In this latter invention, wheels were to be attached to the sides of the ship, and to be worked by the mechanical power of men,

treading, it would seem, upon the rods attached to an endless rope, communicating motion to the wheels by driving belts. In arguing that the physical power of man was the only means that could be



looked to for the turning of these wheels, M. de la Cour said: "One can hardly think of having other moving power than that of men; horses require for their subsistence too great a quantity of water, hay, and corn; they would be unable to endure the labour, joined to the

hardship of the voyage, and they can be employed only with machines too complicated, and taking up too much room. Let us, then, endeavour to draw the greatest amount that we can from the strength of men."

Thus we arrive at the time when, in 1736, Jonathan Hull's steam-boat took a sailing ship in tow, and amid the wonder, doubts, and jeers



THE FIRST STEAM-BOAT.

of spectators, made a great splash, a loud noise, and a black smoke, yet managed to haul the cumbrous hulk along, and gave promise that the child, which had distinguished himself by such an unheard-of feat,

would one day become a giant of great strength, and be a mighty power, either for evil or for good.

It was a maxim of Sir Walter Raleigh, "That whosoever commands the sea commands the trade; whosoever commands the trade of the world, commands the riches of the world, and, consequently, the world itself." But his notion of commanding the sea was that of sweeping from its face the ships of every nation that rivalled our superiority.

The sea has now become a highway for the enterprising of all nations. As the roads of our land have been freed from highwaymen, the sea has been cleared of lawless pirates; and whether upon the water or on the soil, men feel that it is more honourable and profitable to labour and trade, than to fight and plunder. We do, perhaps, still need our naval armaments, and the broadsides of men-of-war may tend to keep some of the greater rogues of the human race in check, as policemen's truncheons are a terror to petty thieves. Still a wonderful advance has been made. Every ship that crosses the ocean and enters the port of a kingdom not its own, is a pledge of peace. Such pledges are of great consequence, when moral and religious considerations fail to enforce a conviction of the absolute wickedness of war.

END OF THE SECTION.







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